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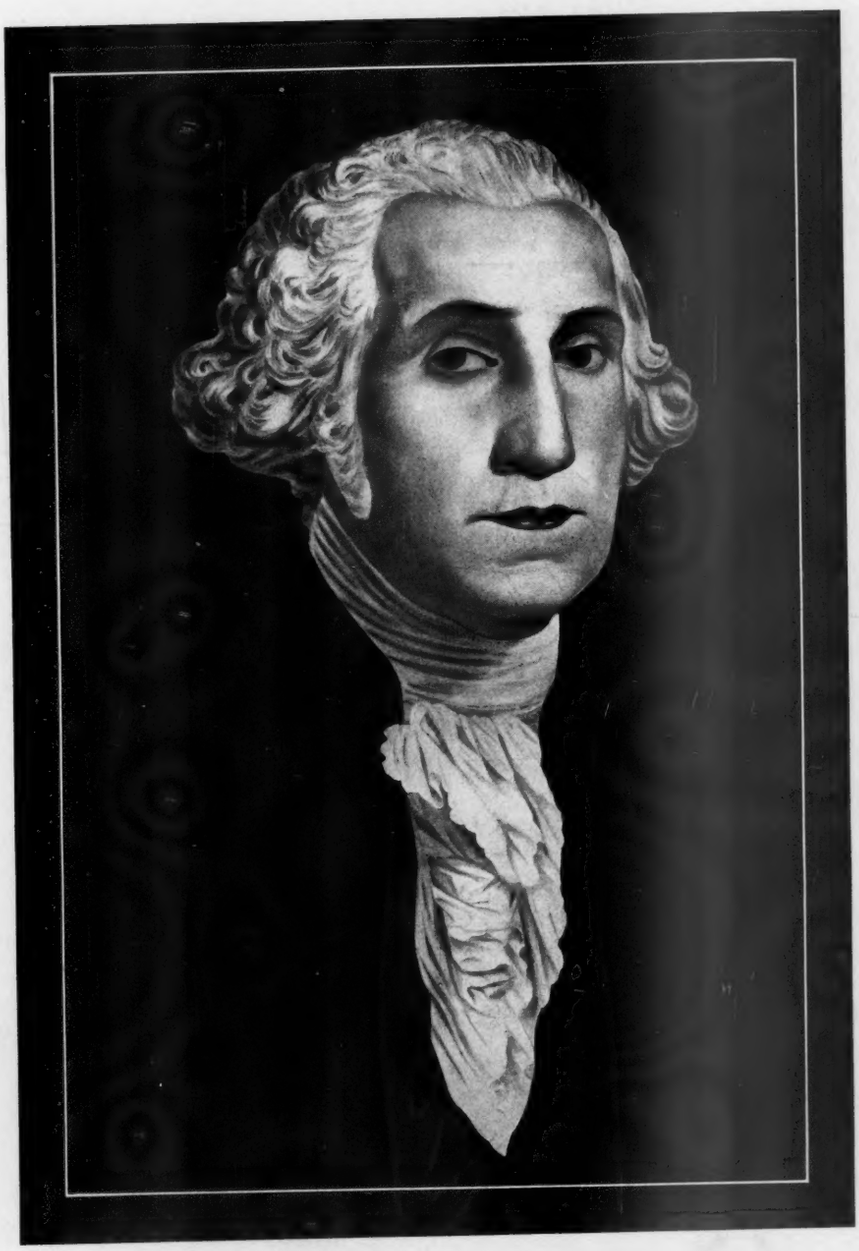

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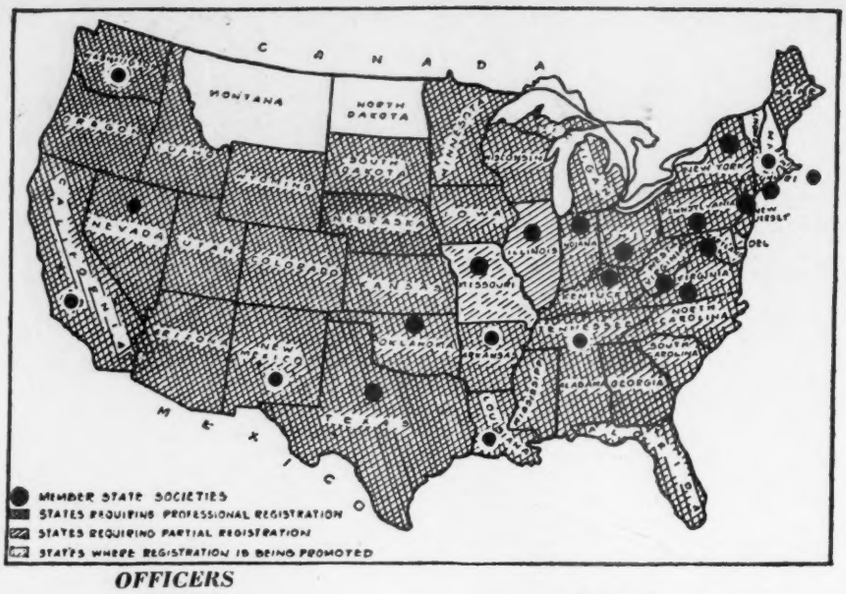
THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

The National Society of Professional Engineers

Headquarters

National Press Building
Washington, D. C.



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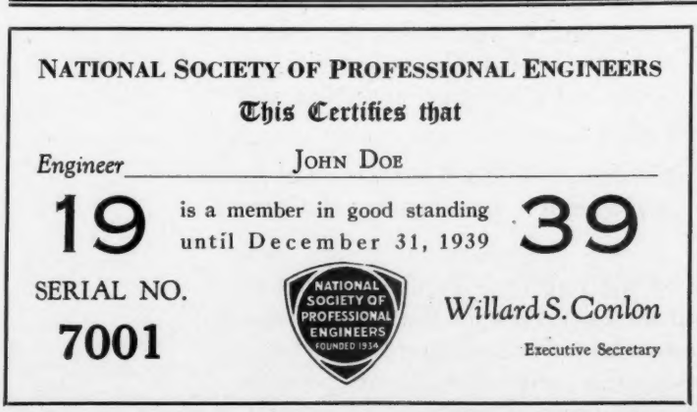
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Willard S. Conlon
Executive Secretary

You are not a paid up member of the National Society of Professional Engineers unless you possess this card.

If you have paid dues and have not received your card, contact first your Chapter Secretary, have him contact the State Secretary, who in turn will check with Washington.

If you do not have the card, the probability is you have neglected to pay your dues, in which event pay them at once.

You cannot afford to be one who slows up the professional engineering movement.

The American Engineer assumes no responsibility for statements or opinions expressed by contributors. Their names identify the source of the same.

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EDITORIAL • • •

HAMSTRINGING

The speed with which the New York State Society of Professional Engineers took action in January condemning the proposed formation of a "Supervising Professional Engineers Union" by one of that State Society's own members, is a credit to the professional movement.

The simultaneous censure of such a union plan by the New York Building Congress and the rejection of such a scheme by members of trade unions themselves is strong evidence the idea is conceived in error.

We do not know just how charters for new types of unions are granted by the major organized labor groups, but certainly this one had little careful study given to it.

We have, and we believe the American citizens generally have, a strong admiration for the American Federation of Labor, but we wonder if someone has not "slipped" in this case. We hope the charter will be rescinded, or possibly it had never really been issued.

A professional engineer acting as designer, supervisor of construction, or inspector, does so as an unbiased judge between owner and builder. The labor union member is employed by the builder. It is inconceivable that coercion through union rules affecting the skilled worker could at the same time, govern the decision of the professional engineer employed to pass upon the tradesman's work.

So many times we have said or written that we believe in the justice of collective bargaining by majority trade groups or unions in their proper spheres and proper relationships. Repeating it is redundant.

Forcing the supervising professional engineer to join the trade union implies the lowering of the standard of workmanship and such a procedure would cause a trend in that direction. Lowering of quality of workmanship affects adversely the standards of safety in building construction and destroys the purpose of the registration acts.

The plan is a step backward, a retrogression, which we are sure will be quickly recognized by the public, by governmental agencies, by the profession and by the unions.

Let all groups promote the welfare of the public. We are still a free people groping at self government, but let us not forget that it has been the engineering profession that has brought us unlimited quantities of safe drinking water, broad highways traversing the continents, skyscrapers, irrigation, telephone, radios, aeroplanes, subways, railroads.

DO NOT HAMSTRING TRAINED INITIATIVE AND LEARNED JUDGMENT.

ROBERT HALL CRAIG

NATIONAL SOCIETY NEWS

"HERE AND THERE"

N. S. P. E. NEWS

By W. S. CONLON, *National Secretary*

ORGANIZATION

President Ford will be calling a Director's meeting soon. Therefore if you have something important for the agenda send it along as soon as possible. This is your society and if you are unable to attend the Board meeting your views and requests are welcome and will receive attention and definite action if at all possible. This is a DEMOCRATIC INSTITUTION—run in accordance with the old American customs.

CIVIL SERVICE

Many requests have been received for reports on schedules of salaries, classification of Engineering positions, etc., in Civil Service, National, State and Municipal. The National will be published in THE AMERICAN ENGINEER shortly. However, we would appreciate your forwarding any information concerning the status of Civil Service as it affects engineers in your state and local communities to this office as soon as possible. Help us to help the other fellow.

SALARIES

The Metropolitan (N.Y.C.) Regional Committee on Engineers' Employment and Salaries, Report on Classification of Engineers' Employment and Salaries, composed of five Committees (representing 21 engineering organizations) of which Dr. D. B. Steinman was General Chairman and of which Arthur V. Sheridan was chairman of the Committee on Salaries, and the writer a member of the Committee on Classification of Grades, reported as follows in 1934:

Grade

1—Engineering Assistant, Salary $30 to $50 per week
2—Junior Engineer, Salary $40 to $60 per week
3—Junior Assistant Engineer, Salary $50 to $75 per week
4—Assistant Engineer, Salary $75 to $150 per week
5—Engineer, Salary $100 to $200 per week
6—Assistant Chief Engineer. Salary $150 to $300 per week
7—Chief Engineer, Salary $250 to $1000 per week

LEGISLATION

Delaware—Professional Engineers License Law has been introduced and is identified as House Bill No. 21.

Maryland—Professional Engineers License Law is about to be introduced.

CONTRACTORS LICENSE LAWS

Texas—N.S.P.E. Vice-President J. W. Beretta advises that a bill has been introduced setting up a "State Building Inspector" with power to approve or disapprove all plans and specifications for work in excess of $25,000 for any political subdivision of the state, for which he will be reimbursed through payment of 1% of the contract price or estimated cost.

The Texas Society legislative committee is on the job and will take such action as is necessary to protect first, the public welfare. and second, the engineering profession.

There are Contractors License Laws being proposed in Texas and Ohio which will have the attention of these state societies.

Incidentally, by way of information, the Associated General Contractors do not look with favor on contractors license laws; however, they do favor prequalification requirements for contractors.

For your further information, the states wherein "Contractors License Laws" are on the Statute books, are:

1. Florida	6. Idaho	11. South Carolina
2. Arizona	7. Louisiana	12. Tennessee
3. Alabama	8. Montana	13. Utah
4. California	9. North Carolina	14. Virginia
5. Georgia	10. North Dakota	

U. S. Bureau of Public Roads—Concerning State License Laws for Contractors, Chief of the Bureau, Thos. H. MacDonald, addressed this memorandum to District Engineers over the signature of H. A. Wallace, Secretary of Agriculture, recently:

> "Pursuant to authority conferred upon the Secretary of Agriculture by Sec. 18 of the Federal Highway Act of Nov. 9, 1921 (42 Stat. 212), and amendatory and supplementary Acts, and in order to give effect to Sec. 12 of the amendatory Act of June 8, 1938 (Public No. 584, 75th Congress), Sec. 3, Regulation 8, of the Rules and Regulations approved Feb. 27, 1935, for carrying out the provisions of said Federal Highway Act, is hereby amended to read as follows:
>
> Regulation 8. Contracts—Sec. 3. No procedure or requirement shall be approved which, in the judgment of the Secretary, is designed or may operate to prevent the submission of a bid by, or the award of a contract to, any responsible contractor, whether resident or nonresident of the State wherein the work is to be performed, such as laws and regulations which require the licensing of a "contractor before he may submit a bid or prohibit the consideration of a bid submitted by a contractor not so licensed, or rules which govern the prequalification or contractors by which the amount of work that may be awarded to a contractor is limited otherwise than by a full and appropriate evaluation of his experience, equipment, financial resources and performance record."

HIGHWAYS

Your reporter has it from a reliable source that a comprehensive report on the feasibility of "Trans-Continental Highways" will be presented to Congress within a few days by the U. S. Bureau of Public Roads, which may result in the reintroduction of enabling legislation. If you will refer to your reporter's letter of Feb. 17, 1938, among other statements this appears:

> "Without attempting to comment on the economic justification of this or any of the other proposals, this office has already recommended that Sec. 2, page 2, line 3, be changed to read as follows:
>
> "the "board") consisting of three persons, *of whom two shall be legally qualified professional engineers in accordance with the laws of the states of their residence,* to be appointed——"
>
> (the italicized words are the proposed *addition*)

Now, how do you feel about this? We know how Indiana, Pennsylvania and Missouri feel, because we received and presented their resolutions. Please refer to the letter mentioned and forward your resolutions if you have not already done so.

If a bill is passed and political hacks rather than qualified professional engineers are appointed, as is the custom, it should not be because of any laxness on our part, and "our part" includes your full cooperation, which of course requires immediate action. Let's show them how this organization can produce results.

ACCOMPLISHMENTS

Please and "double please" draft as soon as possible a brief statement of your State Society accomplishments and the part N.S.P.E. played in assisting you with your program, as a bill of particulars or sales prospectus is being compiled and we want to give every credit to the state societies for their accomplishments.

Incidentally, how do you rate in new members for 1938? The report is on its way to the Board of Directors today, and will be released after the meeting which will be held at this office Saturday February 25, 1939, at 9:15 A. M.

Now, don't read this and file it away. Help us to help you by taking such action as is consistent with your desires, either for or against any and all suggestions. Progress you know requires action.

Have you read Engr. Harris's article in the January issue of the American Engineer? Why not show it to your engineer friends?

Attention—*New York*. Your reporter learned that Mr. Charles B. McCabe. Publisher of the *New York Daily Mirror,* is a Chemical Engineer. Apparently he is not registered because he is not practicing. Nevertheless, a good salesman may be able to sell him the idea of registering and joining. You never know until you try.

(Continued on page 14)

Licensing and Registration of Engineers

by Engineer George J. Nicastro, Director-at-large (New York and Bronx Counties) of New York State Society of Professional Engineers

An address delivered before the student body of the College of the City of New York School of Engineering

GEORGE J. NICASTRO

Dean Skene, members of the faculty and members of the student body of the School of Engineering of the College of the City of New York, on behalf of the New York State Society of Professional Engineers, I wish to thank you for the opportunity to come before you and talk to you on licensing and registration of engineers. I am glad to see such a fine body of potential engineers who want to know about job preparation and how to become good professional engineers. Therefore, I earnestly hope that this talk will be of some help to you in your careers.

Gentlemen, you are studying engineering because you have the highest aptitudes for mathematics, physics and chemistry. The definition of engineering states that it is the trained application of the mathematical and physical sciences to the economic planning, design and construction of utilities, structures, machines and processes. The five major fields of engineering, as you know, are Civil, Mechanical, Electrical, Chemical and Mining. The essential basic studies and training are identical for all fields and only a smaller part of the final collegiate training is differentiated or specialized. This is the trend in most of our engineering schools and universities because the engineering profession demands it.

You gentlemen are particularly to be congratulated for coming to the College of the City of New York, which is on the accredited list and whose curriculum is approved by the New York State Education Department in Civil, Mechanical, Electrical and Chemical Engineering. The Education Law in the State of New York requires that a person must be a licensed and registered professional engineer before he can practice engineering or use the designation engineer in any professional manner. Similar laws are now in force in 40 of the 48 States of the Union.

The purpose of the laws is to protect life, health and property by restricting the practice of engineering to those who are trained and qualified and who have met certain legal state requirements. The law in reality restricts only this untrained, unqualified and otherwise incompetent. It does not restrict the rightful engineer from practice, but rather protects him. You gentlemen have invested and will invest much time and money for your professional training and it is the purpose of these laws to safeguard that investment and enhance its value as much as possible.

There are many examples which show the necessity for these license laws. One is the recent collapse of an apartment house during construction right here in Bronx County. A number of lives were lost in the accident. Upon investigation, it was discovered that there was not a single trained or qualified man supervising the construction of the building. Another example, is the explosion of the Texas school house, which happened about the same time. Scores of children lost their lives in the accident. There again, had an engineer been supervising the school, he would have known the effects of the gas.

The law states that following your graduation, there is required an interneship or period of practical experience in engineering work of four years or more, under the supervision of qualified engineers, before the young man is admitted to the licensing examinations. During this apprenticeship period, and in further preparation for his qualifying examination, the engineer-in-training is expected to continue his education through systematic reading and intensive study, along cultural, technical, and professional lines. In fact, even after becoming a full-fledged engineer as evidenced by legal admission into the profession, the practitioner will find continued serious study necessary throughout his life, both for broadening his foundation and for keeping abreast of the advances in the field of his specialization. It must be remembered that the larger the foundation, the taller the building that can be erected on it.

The basic requirements for registration include age, citizenship, character, completion of secondary and professional education, then four or more years of satisfactory apprenticeship, and finally, the passing of the prescribed written and oral examinations. These examinations cover both theory and practical applications of the basic engineering sciences, engineering principles and

methods, and engineering economics, ethics and practice. These requirements are given in full in Handbook 36 which can be obtained by applying to the University of the State of New York, at Albany, N. Y. I would urge each and everyone of you to secure a copy in order that you may become thoroughly familiar with the requirements.

It may be of interest to point out some statistics based on a survey of the engineering profession unemployment problem. At present, there are approximately 200,000 engineering graduates between the ages of 25 and 64. Of these only about 60,000 (or 30% are employed in positions of professional status and approximately 40,000 (or 20%) are employed as draftsmen or in other subordinate technical positions of sub-professional character. The remaining 100,000 (or 50%) are either unemployed or have otherwise dropped out of the engineering profession through economic reasons. Unlike other professions, the opportunities for independent private practice in engineering are extremely limited. Only about 5% of all engineers are in private practice, with uncertain income, and the remaining 95% are employees working for salaries, with uncertain tenure of employment. Most engineering work is not individual or personal but is generally a routine group work in large organizations.

Engineering organizations are compelled by stern economic necessity to hire and fire men with the fluctuations in the amount of work available. The usual duration of a job is from a few months to a year or two, and the engineer faces the ordeal of hunting for new employment at the termination of each engagement. In hard times, such a situation develops into a hopeless search for work.

The medium monthly earnings of engineers are as follows:

1st year from graduation	$ 55-110
10 years " "	210-300
30 " " "	290-430
40 " " "	260-360

In each case, the higher of the two figures given refers to times of maximum prosperity, as in 1929 and the lower of the two figures refers to periods of depression, as in 1934. The figures mentioned are the earnings of the average engineer, and there is some range of variation both above and below the median. Futhermore, these are the earnings for the survivors, or those who have remained in engineering up to the respective stages, and the later figures do not reflect the termination of earnings or the change of occupation of the progressively increasing numbers of those who drop out of the profession. There are many thousands of competent engineers who wish they could earn as much as bricklayers, plumbers, painters, ironworkers, plasterers or mechanics.

In engineering there is a period of apprenticeship, following graduation, of 5 to 10 years at low earnings before positions of a professional grade are attained. Few graduates reach this stage before the age of 30. The engineer then has only about 20 years in which to realize on his investment of all the years of study, preparation, and training that have preceded, for at about the age of 50 there usually occurs a sharp downward break in the earnings curve, followed by complete termination of earnings generally at or before age 65. For the engineer who finds himself unemployed after he reaches the dead-line of 45 or 50, the situation is generally hopeless.

Unemployment among engineers ranges from 10% in good times to from 30 to 50% in periods of depression or recession. In other words, an engineer may expect to be jobless 10% of the time in periods of prosperity and without earnings or on work relief 30 to 50% of the time in periods of economic stress.

A recent government report shows that, from 1929 to 1934, earnings of engineers in the respective classifications and age groups declined by amounts ranging from 25 to 70%. Many engineers, even though they were in those ages at which engineering earnings reach a peak, reported that they had made less than $300 in the entire year of 1934, and many recent graduates had made less than $114 in that year. From 1929 to 1934, many non-engineering jobs were accepted, not by preference but as the only alternative to unemployment, governmental charity or starvation. Engineers took jobs as gasoline station attendants, apartment house janitors, and common laborers, many of them never again regaining a foothold in their chosen profession.

Popular fiction and the movies have created a misleading picture of glamour and drama in the work of the engineer, Reduced to cold facts however, it is found that the work of the engineer is quite prosaic, and frequently of repetitive routine. Figures, calculations, formulas, tabulations, drafting, tests, contracts, inspection, estimates, reports, and more calculations,—these make up the bulk of engineering work. Engagements and compensation are limited by the throat-cutting competition of the unscrupulous and the less competent. Credit and honor are scant, and responsibility is heavy. A single serious mistake of arithmetic, drafting, or judgment will wreck an engineer's career.

These facts are given not with any desire to dampen your ambitions but with the hope that you will be aware of them. There is much work to be done in order to bring the engineering profession up to its proper place in the sun. The New York State Society of Professional Engineers has done much and will continue to do all in its power to improve the economical, social and professional status of the engineer and his profession. It is hoped that some day you will do your share for the sake of your profession.

Engineering is a mighty poor field for half-hearted incompetents, but one of great opportunity and security for those who love and understand the sciences. Engineering is a socially essential occupation. The future need for engineers is as sure as death and taxes. The work is creative and logical, therefore, a source of deep personal satisfaction to the proficient.

Only essential jobs are truly safe in a world that is being reshuffled at an alarming rate. Political systems are in turmoil everywhere. Governments and national boundaries change overnight. The ultimate relation of capital and labor are still undecided. Even the so-called fundamentals of business and economics are the subject of endless argument. Amidst all this confusion, everybody agrees that men must have food, clothing and shelter, and that a highly developed scientific technique is essential to comfortable living. These are real fundamentals—not to be disputed by any sane man.

In view of the present world situation, may I suggest a new motto for men who look ahead. "In times of stress and change, be an expert in the things that have got to be done." The real engineer is just that. Regardless of political and social changes, man will discover no way to live without machines. He cannot build and operate machines without engineers. The future of engineering is assured.

If engineering has an assured future, so has the individual engineer if he is competent and versatile. Versatility is just as important as competence. To stand firm in a world of change, it is not enough for the engineer to be a great expert on a single process or some special design of boiler or steam engine. Machines, we shall have with us, but the particular machine or process

(Continued on page 22)

Address of Alfred E. Roche, *President*

New York State Society of Professional Engineers

to

Lehigh Valley Chapter Pennsylvania State Society of Professional Engineers

BROADCAST OVER RADIO STATION WCBA JAN. 13, 1939, ALLENTOWN, PA.

Pennsylvania and New York have much in common. Their trade and industry are similar. There is a kinship in their history and tradition. Upon their fields, and by their sons, much of the struggle for national independence was fought and won, and here, and along the North Atlantic States there developed that mind and spirit, which transformed the provincialism of earlier days into the Americanism and Nationalism we proclaim today.

That mind and spirit produced patriotism, which later developed statesmanship. But, as important as these qualities are, there was produced and developed something more important. It was a people of ambitious and cultural mind, with an aggressiveness to proceed in the utilization of our resources. The results of their work are here. Generation after generation has continued to develop and expand the wealth and comforts they initiated, and which we enjoy today.

That mind and spirit also obliterated border lines as barriers to trade; welcomed an exchange of commodities, works, ideas and individuals. Thus, it is, that a fellow engineer from the Upper Hudson River Valley in New York comes to the Lehigh River Valley of Pennsylvania to extoll the great success you have achieved in your development and prosperity, but most of all to acclaim that it is the result of engineering use of your resources.

The academic histories of New York relate the leadership of Philadelphia in the value and volume of port business. Commerce by the natural waterway of the Delaware River to the Sea, made Philadelphia the leading commercial port of America from our beginning until 1825.

During that period, the engineers of New York were studying the advantages of a water course, extending from Buffalo to the Hudson River at Troy. That watercourse—the Erie Canal—was completed in 1825, and transformed the premier commercial port of the country from Philadelphia to New York. That great engineering feat, of an inland waterway, 300 miles long revolutionized internal commerce; developed the demand for engineering services; and directly produced a prosperity in the early development of the midwest; a prosperity not previously enjoyed.

That feat, in the minds of many men, was the beginning of engineering in America. Out of it there came a new line of communications, the most rapid of its time, tapping new resources, opening new frontiers, giving outlet to accumulated capital, all of which produced a high degree of prosperity. The engineers of that development have gone; that frontier has been settled; speedy lines of communication have outmoded the canal, but not before the predictions of the engineers were fulfilled. The building of the Erie Canal and the founding of the first school of Engineering in America—the Rensselaer Polytechnic Institute—was contemporary.

The engineers of Pennsylvania were alert to the purpose of the canal, and by their genius they overcame another great obstacle of nature, and laid the first railroad joining Chicago with the Atlantic Seaboard. That engineering job, likewise, revolutionized the transportation world, and by repetition of rail extensions and allied communications our nationalism was solidified, and our engineering talent acclaimed in a national sense.

I have not inferred that the industrialist, the banker, the editor, and the doctor have not done their part—large and well—in our growth and development. Neither do I withhold recognition of the work of the architects, accountants, or lawyers, but the facts must be faced—the engineer has been at the base and in the root of each growing section, developing it for our well-being and convenience. Let us realize how water supply, mining, steam or elecrtic energy, chemistry, sanitation, processes, works or machines serve us. All are fundamentally part of the engineering program.

Engineer Eddy of Boston wrote in 1937 regarding professions:

"The several professions differ materially in their objectives. The clergyman ministers to our present spiritual needs; the doctor treats the current illness of his patient; the lawyer deals essentially with the present, while he interprets the laws which have been passed.

"The engineer, on the other hand, deals essentially with the future, using a rich experience and accumulated knowledge as a basis of his studies. His bridges, his machines, his structures, his chemical processes, his mines, his ships—all are planned, not, by any means, for the past, not alone for the present but largely for the succeeding generation."

Continuing, Engineer Eddy wrote:

"In the next few generations, there will be an accelerated advance in the accomplishments of engineering. New discoveries by science and their commercial use will follow one another with increased rapidity. Mass production will be extended to far more industries; new inventions are weekly supplanting past methods of production; and agriculture will be made to yield more and more to combination-control and machine use on the farm."

It is essential that production machines and farm produce be accelerated each decade. More backs are to be clothed, more mouths to be fed, more feet to be shod; thus more scientific ways of doing jobs must be initiated. Babson says our population is seven million more in the past six years.

Equipment changes will inevitably shorten the worktime required to satisfy the public demand for all goods. Whatever this reduction may be, it will result largely from the activities of the engineer. Credit for lightening the human burden will, however, be accompanied by a

(Continued on page 23)

Engineering Planning in Its Relation to Agricultural Planning

By FRANK C. VILBRANDT

Head, Department of Chemical Engineering, Virginia Polytechnic Institute, Blacksburg, Virginia

(Presented before Section M, A.A.A.S. Richmond, Va.)

The engineer plans to convert the discoveries of science to the practical good of human welfare, while in the narrow sense, the agriculturist plans to assist nature furnish the foodstuffs needed by mankind.

During the depression the agriculturist found his plans inadequate to meet the problem of production of foodstuffs with an adequate return for his labor and investment, in spite of his usual capability in waging yearly battles against pests and the elements. An upsetting of world economic conditions caused the disastrous condition in which he found himself, and he also found he had no hand in shaping or modifying such outside conditions. His situation became so bad that he needed help, any help, no matter how administered, charitable or otherwise. The cooperative farm groups did their best, but there were too many individual farmers to make the efforts of the cooperatives beneficial over the entire field of agriculture, and these groups soon found that the individual farmers had dragged the cooperatives down with them in their efforts to salvage something from the farm situation.

It became evident that a paternalistic government was essential to alleviate the suffering and to bring about some measure of relief, by artificially aiding these agri culturists during a period of adjustment and recovery. The Agricultural Adjustment Act was designated to extend this helping hand to the farmers; so uniform regulations and restrictions were imposed upon all the agriculturists.

With business and industry likewise suffering from the same world economic condition, an assumption was made that the evils were entirely due from within industry and that uniform restrictions and regulations set up by a paternalistic government would eliminate the evils of a fictitious overproduction; the National Industrial Recovery Act was imposed upon industry. It was applied alike to large and small industries without regard to plans for recovery and operation already in force and without regard to the non-uniformity of conditions in the industry dictated by the nature of each industry. It became evident very shortly that the application of a single form or plan of solution to our industrial problem of recovery was doomed to failure even before the act was declared unconstitutional.

In the approach to any problem the engineer usually finds more than one way to solve the problem before him. In planning he seeks out the various controlling factors or the variants, and compares the various possibilities that an accumulated mass of details point out as existant. Only after a careful and exhaustive study of facts based upon data accumulated and upon indeterminants based upon the best theories available, does he attempt a conclusive engineering appraisal of each proposal, and then later decides which proposal will best serve the purpose in hand.

FRANK C. VILBRANDT

Engineering planning presupposes the application of the technique and discipline of formally and deliberately insuring:

(1) that every conceivable solution has been brought to light and considered;

(2) that definite comparisons have been made using only facts based upon available data, supplemented by adequately thought-out assumptions;

(3) that the best solution has been arrived at by comparison, then by elimination and finally by a conclusive appraisal.

There should be no great difficulty in understanding the value of similar attitude in approaching the problems involving our agricultural, political and social activities.

Regarding the relationship of engineering planning to agricultural planning it must be remembered that engineering and agriculture are already closely related in the processing industries. The farmer, agriculturist, or the "landsman" or worker of the land, is the originator of many of our chemical industries; in fact more than one-third of our present groups of chemical industries had their origin on the farms or in rural communities of ancient and medieval Europe and Asia, and some in our modern civilization of the past two centuries. These

people were the industrialists of their age, producing the raw materials and then processing them into usable commodities or finished products for their own consumption first and disposing of the excess to outside people. They furnished the bulk of materials handled in the merchant ships of the Hanseatic League. But the rise of new economic conditions created by the concentration of people in walled cities, and the need for self-sufficiency in each city, made it necessary to process the farm commodities on a larger scale than was possible in the rural communities and on the farms. This led to the establishment of the artisans or guild workers for processing and fabrication, and the agriculturist for the growing of crops, each group becoming more specialized. The clergy, the military and the politicians consumed the commodities and paid for such materials by taxing the agriculturists and the guild workers or artisans (forerunners of our modern engineers to pay the bill. This introductoin of specialization, even on the farm during the middle ages, has grown apace, every year each group becoming more dependent upon the others. Today our agriculturist is as guilty of as high a degree of specialization as he accuses the 'city worker', many of them going so far as to no longer process their cream into butter, preferring to sell their cream and buy back the butter churned by specialists in the city.

Among the industries whose origin may be credited to the farms are:

(1) Soap has its origin among the Visi-Goths and on the olive groves along the shores of the Mediterranean;
(2) Soda and lyes have their origin in the off-season activities of the worker of the land, in the leaching of the ashes from their home fires and from burned seaweeds.
(3) Silk has its origin among the peasantry of Cathay.
(4) Tanning of animal skins goes back to the first group of mankind who ventured into the colder climates.
(5) Dyeing of the grass skirts, the leathern breeches, and the homespun fabricated by the tailors of their times, the housewives or women of the tribes, originated our big dyestuffs industries of today.
(6) The cutting of chesnut, querbracho, divi-divi and logwood for extraction of the tan and dye therein is still a landsman's job today.
(7) The growing of madder for the red, and indigo for the blue natural dyes was a farm activity up to the last century.
(8) Fertilizer made on the farm instead of the chemical plant is only of recent decline.
(9) Our huge synthetic ammonia plants have a direct connection in name from the camels' dung found in the stables of the Temple of Ammon.
(10) Paper is early referred to as papyrus along the Nile.
(11) Brick-making is mentioned in early Egyptian history.
(12) Glass has its origin among the Phoenician sailors who were shipwrecked on the Tyrrean shores.
(13) Making of white lead had its origin among the Old Dutch Masters of Holland.
(14) Lime burning was early practiced on each farm according to their needs for mortar to build their houses and especially their chimneys and fireplaces.
(15) Making of paint pigments from earths by early warrior tribes is the origin of our siennas and umbers of today.
(16) Pottery making for vessels of storage and cookery was the task of the womenfolk of the tribes.
(17) Tile-making was a local farm task until our recent industrial advance.
(18) Salt from brines was a family task of the pioneers here in United States in the same localities where there are now large salt works, such as the Schenectady, Kenmore, Wyandotte, Midland, Pomeroy, Kanawha and other districts. Mahatma Ghandi is our present day disciple of peasant workers controlling salt production in India.
(19) The fish scrap fertilizer industry of the southeastern coast had its origin among the early New England corn growers who cooked the fish and separated off the oil from the menhaden fish before they were used as fertilizer.

Others could be added to this list. You will also recognize a number of these that you, your fathers or grandparents worked at in their homes, or that are still practiced today, not only among aborigines tribes but even in America.

It is quite evident that the peasant and the agriculturist had much in common with our chemical processing of today. They have provided and are still providing the raw materials for the chemical industries. Today the agriculturist is associated with the chemical engineering by providing the following raw materials:

(1) Beets and cane for sugar production.
(2) Corn, potatoes, and rye, etc., for alcohol production, in beers, distilled liquors, solvents and antifreeze.
(3) Corn, wheat, rye and oats for breakfast specialties.
(4) Corn for table syrups, and salad oils.
(5) Corn, wheat, potatoes for starch and starch products.
(6) Milk for casein glues and plastics.
(7) Hides for our leather.
(8) Agricultural wastes for synthetic lumber.
(9) Cotton for salad oils, and low price cotton for rayon.
(10) Forest growth for rayon textiles and cellophane sheeting.
(11) Peppermint for menthol and peppermint oils.
(12) Flowers for perfumes.
(13) Cotton, wool, flax, jute, ramie, etc., for textile purposes.
(14) Rubber for our tires.
(15) Tung and flaxseed for paint vehicles.
(16) Grapes and fruits for wines.

These are some of our present day field products that make the farmer and the engineer interdependent.

Engineering planning must indicate how much profit can be made, how much can be paid for labor, for further development, for taxes, for overhead, for sales and for distribution on a continued and permanent basis. Engineering planning demands an assured, uniform and low price supply of raw materials. The agricultural planning likewise should include the same assurance of uniform, steady and low priced raw materials if the raw materials from the farms are to continue to find use in the industries.

The industrialization of the farm is not a new idea. The socalled hog-corn farmer already practices the two-level price system. He sells foodstuff corn at one price, feeds his surplus corn to his hogs and cattle, which brings him considerably less per bushel, when his corn return is figured in terms of beef or pork per bushel of corn. He does likewise with his forage crops and his fruits. By feeding a low priced corn to his hogs, he takes out of circulation much corn that would glut the high price level

(Continued on page 21)

New Jersey Society Has Radio Broadcast in Conjunction with Its 19th Annual Convention

SUBJECT—Engineers' Forum.
DATE—Friday, January 13, 1939.
TIME—5:15 P. M. to 5:30 P. M.
PLACE—Bamberger Studio, Radio Station WOR.
Mr. Godwin—Studio Director.
Mr. Dave Driscoll—Special Features Director.

* * * * *

Announcer

The 19th annual convention of the New Jersey Society of Professional Engineers, which started today at the Robert Treat Hotel in Newark, is being attended by over 2,000 engineers from all over the state of New Jersey. The Technical and Business sessions are now being held and the convention will close with the annual banquet tomorrow night at which Bridgadier General Edward C. Rose of the New Jersey National Guard and vice president of the Public Service Corporation will be the principal speaker.

Tonight, we have with us in the studio, six of the foremost engineers in this state, representing several branches of their profession, who will give a discussion covering their seperate phases of engineering. I now introduce to you, Engineer Jack Poppele, the Chief Engineer of Radio Station WOR, who will introduce the speakers you are about to hear and will himself lead off with a discussion on "Radio Transmission." Engineer Poppele.

Engineer Poppele

To begin with, radio transmission is unique because it represents the one science, which shows that a straight line is not necessarily the shortest distance between two points. The power company sends you electricity over copper wires that run directly into your home; the bridge-builder knows exactly, where the opposite approaches of his bridge will be; pipelines for the conveyance of water and oil, gas or steam are constructed from definite point to point—but the radio engineer has the strangest problem of all. When he builds a radio station he can't possibly know where all his listeners are located.

So the radio engineer does the only thing he can under the circumstances. He transmits his power to every square inch of the area which he wishes to cover. Of course he often concentrates on certain regions, such as we do at WOR with our giant 50,000 watt transmitter at Carteret, N. J., aiming its strongest signal up and down the Atlantic seaboard.

Strictly speaking, the percentage of efficiency in radio transmission is tremendously low. It cannot be any other way, for the amount of power absorbed by your receiver from the air is infinitesmal compared with the thousands of watts, which WOR or any modern station unleashes into the air. But it is this very inefficiency, this blanket of radio energy, which we lay down across vast areas of landscape, that permits you to enjoy radio programs as you roll along in your car or wherever you may have to set up a receiver.

The radio engineer meets frequently with forms of transmission other than mere radio frequency, for broadcasting demands that speech channels be maintained from studio to control board to transmitter, carrying programs with true fidelity to unumbered radio listeners.

When the signal from the studios has been impressed upon the radio carrier itself, the engineer is faced with the problem of conducting the output of the transmitter with a minimum loss to the antenna, where it is then radiated to the vast audience.

Our problems of transmission today are unique too. We must put a strong, clear signal into radio receivers regardless of local conditions or, "Dead spots," capable of riding above noise levels and interference at all times. We must secure the maximum coverage with the power allowed us by the Federal Communications Commission, to whose high standards we must constantly adhere. And at the same time we must not go beyond our coverage area and interfere with other stations operating on the same or adjacent channels.

I have given you a review outlining the details covering radio transmission, while the next speaker will discuss with you the transmission of electricity for power and light. He will be the engineer, who has designed the electric cable installed at Boulder Dam and many other large power installations. D. Robert C. Wiseman, Chief Engineer of the Okonite-Collender Company, who is well qualified to speak on the subject of "Electric Transmission," Dr. Wiseman.

Dr. Wiseman

Electricity has rightly been called a servant of man. It is ready at all times to provide light and perform tasks and starts work instantly at the snap of a switch.

Transmission lines are necessary for power to flow out from a generating station. This may be an aerial tower line built on the same principles as a suspension bridge, requiring the same careful engineering to provide the necessary strength during ice storms, hurricanes and so forth. In addition the conductors must be insulated for voltages as high as 230,000 volts. The failure of an aerial line may result in an entire city being without light or power. It requires the work of many engineers to design such a power line.

Just as some rivers are too wide for bridges and tunnels, so are they too wide for an aerial crossing. In such cases the wires are insulated, enclosed in a sheath for protection and laid on the bed of the river. Such an installation requires the services of marine engineers for the proper trenching of the river bed and laying cable in the trench so as to protect it from dragging anchors.

Distribution cables, usually underground and unseen, correspond to city streets and carry power to your house. The engineer must design the cables and structures in which the cables are installed so that the power does not stray from its intended path. The design of this hidden system requires diversified engineering to provide a physically strong system and in addition one having ample insulation to keep the current in place and able to radiate the heat developed so as not to overheat the cable.

The service wire from the street to our house is simple compared to the rest of the distribution system but still involves the services of several engineers to ensure continuous service. If an ice storm breaks the service wire from excess weight of ice the entire household is disrupted by lack of lights, refrigeration and in many cases, heat. Proper design of the service wires by the engineers, or the design of the cable placed underground, has eliminated most of the trouble.

Where safety of the public and continuity of service are the all important factors, the public rightly places it confidence in the engineer.

Engineer Poppele

The Indian to cook his meals and keep warm, used a simple wood fire. Modern existence requires something

more efficient and convenient. This need is furnished by the gas industry, which makes it possible for you in your homes to turn on a gas burner and the heat required for cooking, baking and other needs is instantly available. The engineer makes these advantages possible and I now present to you Engineer J. Garwood O'Keeffe, General Superintendent of Gas Manufacture of Public Service, who will review for you the evolution of the gas industry.

Engineer O'Keeffe

I have chosen for my subject a topic very close to my heart, "The Evolution of the Gas Industry."

The manufacture of gas was substantially the first fusing of the scientific and the practical to establish an industry and to necessitate the services of an engineer, the man who translates the advances of science into our daily lives.

Although gas was known to the ancients, the application was local and unimportant. But with the extending of the limits of man's knowledge during the Seventeenth century, a Belgian physicist or engineer, Van Helmont, first observed the evolution of gas from a heated crucible of coal.

Almost in the year George Washington, a land surveyor, was first inaugurated President, the English engineer, Murdock, first practically applied gas lighting in his home. Associated with James Watt, famous inventor of the steam engine, they first applied it industrially when the famous Watt and Boulton foundry at Soho was lighted with gas, while London's streets were first lighted with gas in the same period.

American cities soon followed England's lead with gas lighted streets, while American homes gradually accepted the improved lighting, which this new industry was furnishing.

Shortly after the Civil War, an ex-army officer, Thaddeus Lowe, invented the water gas process, a new way of making gas, which was to revolutionize the industry. Utilizing by-products of the infant but fast growing petroleum industry and developed by such able engineers as the late Alexander Humphreys, Walton Clark and a host of others, gas soon became the universal illuminant in even the smallest towns, aided particularly by the introduction of the Bunsen flame in conjunction with the Welsbach incandescent mantle.

However, the rapid improvement in the electric lighting art indicated to the gas engineer, that his future field lay in the supply of controlled heat for domestic, commercial and industrial use, which has proved to be a greater opportunity, than the lighting field ever could have been.

The engineer has contributed much to the comfort and well being of man, both in the home and in the factory. No product of industry lends itself more readily to engineering control or has behind it a finer heritage of able engineers in its development and production, than does manufactured gas.

Engineer Poppele

Few of us stop to realize how important a part the enginer has in the safety and health we are able to enjoy though living in an overcrowded metropolitan area. The engineer makes it possible for us to live as we do, thousands in a single city block, and it gives me much pleasure to present to you Engineer James W. Costello, Chief Engineer of the city of Newark, one who will speak to you on the problems involved in providing sanitary services to a large city. Engineer Costello.

Engineer Costello

There are no two departments in municipal service so closely related in the protection of the public health as water supply and sewage disposal. They are absolutely essential and mandatory to the well being of every individual in the community.

Few users of our water system fully realize the problem involved in furnishing water to a large city. Let us follow the path of the water back from the faucet to the source of supply. We go from the faucet back to the house-piping to the meter in the basement; through the meter and along the service pipe from the basement to a relatively small watermain underground in the street, supplying other houses, industries and fire hydrants. From there we go back through larger feeder mains and on to still larger transmission lines, five feet or more in diameter and several miles in length, and through rock tunnels, perhaps to a reservoir holding several days' supply. Back from this distributing reservoir, we still travel miles of additional and larger transmission mains to pumps taking water from a lake or river or to collecting reservoirs on an upland water shed of many square miles in extent, where constant supervision and strict sanitary control must be exercised to make sure, that the rain falling on this watershed area and running into these collecting reservoirs, through streams and through the soil, is kept pure and wholesome.

Similarly, we can trace the waste water back from the basin to the trap installed to prevent sewer odors from coming into the house, through the soil pipe leading into the main in the street, through the mains carrying waste matter along by gravity flow to the main intercepting sewers, and finally to the treatment plant where solids are removed and the clarified sewage flows or is pumped into large outlet sewers extending far out into large bodies of water or into the sea; or perhaps, if treated by filtration and chlorination, the effluent is clear and sterile and may be run directly into streams.

Operation of a water supply and sewage system requires specialized knowledge and training along many lines; and above all constant attention and diligence to make sure, that the water faucet never fails the user and that the sewer never fails to function.

The absolute necessity of a satisfactory supply of water and an adequate sewerage system to the existence of a community is too obvious to require elaboration.

Engineer Poppele

The development of transportation facilities has been a very important factor in the rapid expansion of these United States. No one thing is more outstanding, than the construction of bridges, both railroad and highway, spanning our rivers and valleys. I next introduce to you Engineer Morris Goodkind, Bridge Engineer of the New Jersey State Highway Department, who will speak to you on this phase of engineering; Engineer Goodkind.

Engineer Goodkind

Advancement in civilization has always been dependent upon the available facilities for interchange of knowledge, merchandise and commodities. The problem of interchange is one of transportation and we therefore find that the development of civilization has always coincided with the development of transportation.

To provide continuity of transportation we resort to the use of bridges to pass over all obstacles, and the bridges become a most important factor in the perfection of transportation facilities. The story of bridges is as ancient as the history of man itself. The felled tree, which primitive man used for crossing a stream was just as much a bridge as the George Washington bridge across the Hudson.

In spite of the ancient origin of bridge building and its continued development through history, bridge design up until quite recent years was based almost entirely on guesswork, tempered with judgment. The scientific media

for bridge analysis and design did not become available to the engineer until the early years of the present century and the accomplishments in this field within the past twenty-five years far overshadows those of the untold centuries, which preceded. Credit for this is due to the untiring efforts of the physicists, mathematicians and engineers of our own times, and their realization of the requirements of our civilization.

The load and volume carrying capacities are fixed by estimated future conditions rather than the requirements of the present. Other considerations given to the design of bridges are the ease and economy of maintenance, and last but far from least, is their aesthetic treatment. The public has become conscious of its bridges and demands not only comfort and security in them, but also beauty. The state of New Jersey takes just pride in the national awards it has received from time to time for the architectural merit of its bridges.

With proper design and maintenance, a bridge can be the longest lived structure of a utilitarian nature erected by man, and its planning should be sufficiently comprehensive to ensure its satisfactory function for unlimited years.

Engineer Poppele

The rapid movement of vehiclar traffic is of vital importance to a large metropolis. Realizing this, the states of New York and New Jersey combined to create the Port of New York Authority for the purpose of constructing tunnels and bridges across waterways which separate these two great states. There is none better qualified to discuss "Tunnels" than an engineer, who designs and builds them. You will now hear from Engr. E. Warren Bowden, Asst. to the Chief Engineer of the Port of New York Authority. Engineer Bowden.

Engineer Bowden

For the past several decades the metropolitan New York area has been the scene of remarkable tunnel development, so much so that it is almost impossible to realize the dependence of this great center of modern activity on its means of service and transportation beneath the surface. Dating from the first attempt to tunnel under the Hudson river by Haskin in 1874 and from the first subway contract in 1900, tunnel engineers have literally wrought miracles of construction to provide these innumerable underground and under river arteries, which carry the life blood of a mighty metropolis.

For all purposes, rapid transit, railroad, highway, gas and water supply, forty-three individual tubes pass under the waters surrounding Manhattan. Ten cross under the Hudson river between New Jersey and New York, seven pass under the Harlem river and twenty-six under the East river.

In many respects the most interesting of these tunnels are the vehicular tunnels under the river, chiefly because of their size and the problems of ventilation involved. Of these, the Holland tunnel, completed in 1927, and now carrying close to 13 million vehicles annually, is remarkable for the successful solution of the problem in furnishing an ample supply of fresh air to a heavily traveled motor highway passing under a mile wide river.

The Lincoln tunnel and the Queens Midtown tunnel are patterned after the Holland tunnel. In structure, these under river tunnels are metallic tubes lined with concrete and so arranged in cross section, that the roadway occupies a central area with air ducts above and below the road bed.

Ventilation of these vehicular tunnels is by the transverse method. Fresh air from the air duct below the roadway is supplied at all points through the length of the tunnel and vitiated air is removed through openings in the tunnel ceiling to the exhaust air duct. From the ventilation buildings fresh air can be supplied, making the air purer than that frequently found at some busy traffic intersections in Manhattan. The air is continuously analyzed for freshness and the latest and best equipment developed by electrical and mechanical engineers insure the safety of the motorist.

Engineer Poppele

We have presented to you this evening, a brief review describing some of the services the engineer performs in funrishing those facilities, that are so essential to your modern existence. The engineer is the one, who creates and constructs these essentials, that are now accepted as a necessity.

TO THE ENGINEER

I bow, bareheaded, to the engineer,
Who toils in some rear
Draughting-room or field shack where
He proves his calculations,
Devious, and exact, how this plus that
Shall properly, and thiswise come to pass.

And greatly; yes majestically
Renders his precious service to the race.

I see the mimic, on the silver screen,
Wildly applauded by the multitude.
I hear a piping voice acclaimed,
Broadcast, across a nations' breadth.

I watch a gaping crowd kow-tow
To some full-mouthed and puny
Parrot-like juggler of mere words.
I find a thousand pages of "the press"
Daily re-inked for moron-mind cartoons.

I see a futuristic daub notorious
With the incompetent who held the brush.

Indeed! they get full measured
Plaudits from the do-naught herd.

But when yon quiet man draws near
Join my salute, he is an engineer;
And human, though he's unspectacular,
He is a man of substance and of worth.

'Twas he who made the motor which upheld
The "We" part modest Lindbergh registered.
He made the "towering set" to dramatize
Your city brilliant 'neath the mid-night skies.
He aids you daily, in a myriad ways;
More precious fees than coin enrich his days.

And fickle fame too rarely seeks him out,
While in a crowd most likely he is mute;
Sans cunning little tricks to entertain.
His discourse would require attention,
And some thought upon your part.

And so too often he is quite unknown
Beyond his fellows in the world of work;
But there, he listens for your call, or yelp;
Ready, with proven knowledge, to give help
To curb the flood, or devastating pest;
He merits rich acclaim, among the best.

ROBERT C. LAFFERTY
Artist & Architect

NEW YORK STATE BOARD OF EXAMINERS

The 189th monthly meeting of the N. Y. State Board of Examiners of Professional Engineers was held in New York City on December 28, 1938. The Board interviewed 8 applicants and of these scheduled 3 for the written examinations and rejected 5. The Board considered 200 applications and of these 117 (or 58 percent) were assigned to the written examinations, 47 were rejected, 15 were held for further consideration, and 21 (or 10 percent) were approved for license.

DO YOU KNOW...

Pertinent Facts Concerning the Professions

3. ARCHITECTURE

By **Engr. D. B. STEINMAN, Past President N.S.P.E.**

Do you know that:

There are only 13,000 architects in the United States.

The American Institute of Architects, organized in 1857, has only 3,000 members.

Registration laws for architects are in force in 38 States and the District of Columbia.

State legislatures began enacting laws regulating the practice of architecture in 1897. (Engineering 1907).

Admission to the "Profession of Architecure" is through registration by the State.

In 1912, seven schools of architecture were accredited by the American Institute of Architects.

31 of the 52 schools of Architecture in the U. S. are now accredited as members of the Association of Collegiate Schools of Architecture. The approved schools draw 88% of all the students.

4 of the 52 schools of Architecture (California, Columbia, Harvard, and Princeton) require pre-professional college training of 2 to 4 years, making the total collegiate study 6 to 8 years in length. 28 schools give a 4-year course, and 20 schools give a 5-year course, all leading to a Bachelor's degree.

In a number of the schools of architecure, there is a definite limitation and careful selection of entering students.

The National Council of Architectural Registration, formed in 1920, sets up and gives standard examinations acceptable to the member State Boards.

Every new member of the American Institute of Architects is assigned to his local Chapter and is required to pay the initiation fee and annual dues of that Chapter.

There are 40,000 juniors or draftsmen employed by the 13,000 architects in the U. S.

Juniors and draftsmen are encouraged to join the local Chapters of the A.I.A. as Junior Associates.

The American Institute of Architects has adopted "Standards of Practice" which are printed for the convenient use of members. These include. "Principles of Professional Practice," "Schedule of Proper Minimum Charges and Details of Service to be rendered," and "Circular of Information on Architectural Competitions." Any deviation by a member from *any* of these standards of practice subjects him to disciplinary action by the Institute.

The American Institute of Architects has 13 cooperating State Associations of Architects. As the result of a unification program started in 1933, four of these State Associations are now Member State Associations of the A.I.A.

The largest local Chapter of the A.I.A. is in New York City, with 443 members and 26 associates.

In addition there are many local societies of architects having no connection with the A.I.A.

The New York Society of Architects (not affiliated with the A.I.A.) has 1118 members, all active practitioners in New York State. Of the 799 members in New York City, only 184 are also members of the A.I.A. The other 615 members did not choose to become members of the Institute. ("The fact that these architects *are* of high professional calibre is indicated by the fact that they are with almost no exception licensed to practice by the State of New York."—A.D.H.)

Professional recognition of architects is determined by State registration, not by membership in the A.I.A.

There are many in the architectural profession who advocate that registration laws should merely protect the title "architect" or "registered architect" without attempting to restrict practice.

In the State laws for admission to the practice of architecture, 11 have no education requirement, 2 require grammar school graduation, 17 require high school graduation, 1 requires high school graduation and two years of college, 4 require graduation from architectural college, and 1 merely specifies education satisfactory to the Board. The experience requirement ranges from 1 to 6 years. There is usually the further requirement of an examination.

A large number of the States accept the 30 schools of architecture that have been approved for educational credit by the National Council of State Registration Boards. This list is practically identical with the membership of the Association of Collegiate Schools of Architecture (31).

The first school of architecture was established in 1865 (at M.I.T.)

There are about 6,000 students enrolled in the 52 schools of architecture. About 2300 are admitted annually, and only about 700 graduate. The largest student loss (40 percent of those entering) is during and at the end of the first year. *In the schools where limitation and selection of incoming students is in force, the loss for academic reasons is very small.*

The school of architecture at Yale sets its limit at a total of 100 students. Princeton limits the enrollment in its two upper years to 25. Cornell admits only 45 new students each year. Pennsylvania State, McGill and Toronto also limit their enrollment.

Selective admission of architectural students is based on seriousness of purpose, personality, and character, as judged from evidence which the applicant is required to submit.

In the schools using the first year not only for preliminary training but also as a test of fitness on the student's part to continue, this double purpose lowers the academic standard and "swamps the teaching force by sheer weight of numbers" (50% of all the students being in the beginning class).

Of the students entering an institution from "classical" and "technical" high schools, there were only one-third as many failures among those who had the discipline of the classical training as among those who had been subjected to the more practical preparation.

(Continued on page 21)

OPEN FORUM

University of Puerto Rico
College of Agriculture & Mechanic Arts
Mayaguez, P. R.

Dr. D. B. Steinman
117 Liberty Street
New York, N. Y.

Dear Dr. Steinman:

I take the pleasure of acknowledging with thanks your letter.

I will take the steps to see if it is possible to affiliate the Institute of Engineers of Puerto Rico with the N.S.P.E.

I hope to get at least ten members of the Institute of Engineers of Puerto Rico to become members of the N.S.P.E. if this is the minimum number required for affiliation. Kindly inform me if I am correct in this matter.

I am enclosing a proposed constitution of the Pan American Society of Engineers for your criticisms and suggestions.

I am organizing an excursion of engineers to Santo Domingo through the "Sociedad de Ingenieros de Puerto Rico," of which I am a member of the Board of Directors, and I hope to take the initial steps to lay the foundation for the Pan American Society of Engineers. I hope that invitations for the first meeting will be issued by the Hon. Minister of Public Works and Communications of Santo Domingo to all countries of the Americas for the first meeting at Santo Domingo.

With my best wishes for your health and success, I remain,

Yours cordially,

C. Calor Mota
Head, Department of Civil Engineering.

Prof. C. Calor Mota,
Head, Department of Civil Engineering,
University of Puerto Rico,
Mayaguez, P. R.

Dear Engr. Mota:

I have your letter, and am delighted to note that you are taking steps to see if it is possible to affiliate the Institute of Engineers of Puerto Rico with the N.S.P.E. I shall look forward to the reports of progress on this desired procedure.

Although it requires ten members in any territory to establish a Member State Society of N.S.P.E., a different procedure is followed in arranging for the affiliation of a State Society already established. Every licensed member of the State Society becomes a member of N.S.P.E., and the State Society, in this case the Institute of Engineers of Puerto Rico, is required to forward to N.S.P.E. the annual dues at the rate of $4.00 per licensed member. I suggest that you correspond on this subject with the National Secretary of N.S.P.E., Engr. Willard S. Conlon, National Press Bldg., Washington, D. C. I am sending him a copy of this letter so that he may communicate with you directly.

I have reviewed your proposed constitution of the Pan American Society of Engineers, and I want to congratulate you on this splendid document. I have indicated some minor revisions, and am forwarding the copy to Engr. Arthur V. Sheridan, President of the National Society, for his further review. I am asking him by copy of this letter to communicate with you directly and to forward to you his final revised draft of your proposed constitution. I know that his suggestions will be helpful, as he is highly qualified by his splendid past experience in this field.

I shall also look forward to your reports on the meeting to be held at Santo Domingo. I note that you expect invitations to be sent to all countries of the Americas for this first meeting, and I hope it will be a success. If the meeting comes at a convenient time, I would not mind going there myself.

With all kindest personal regards,

Faithfully yours, D. B. Steinman.

EDITORIAL COMMENT

FUTURE EMPLOYMENT

It would seem that if the law pertaining to the employment of engineering services were more fully understood by citizens, public officials, institutions and industries there would not be an idle engineer. Inasmuch as its purpose is to safeguard life, health and property, a stricter and more general application and observance of the Engineering Registration Act, which involves eleven branches of engineering, would result in far greater benefit to the people. The meaning and intent, quoting the law, "includes any professional service, such as consultation, investigation, evaluation, planning, design or responsible supervision of construction or operation in connection with any public or privately owned projects, wherein the public welfare, or the safeguarding of life, public health or property is concerned or involved when such professional service requires the application of engineering principles and data."

The economic, social and civic problems of today have become of such importance as to demand the greatest efficiency and economy and it is desirable and necessary that all plans and projects be wisely prepared and guided. The talent of engineers, possessed of knowledge of mathematics, the physical sciences, special education and experience is essential for these modern undertakings.

In the past, in both normal and depressed times, a great many activities were carried on by haphazard and unscientific methods but today it is different; such methods are not tolerated and prudent effort is demanded. The gradual adoption of scientific treatment of modern problems, and the perpetuation and protection of engineering in all its branches, are guarantees of comfort, safety and wealth to the public.

Among the many fields that are opening up for competent men of vision and initiative are, affairs of communities; organization; management; public and executive offices; safety; transport; fueling; housing; property development; agricultural, industrial and utility enterprises; conservation; air conditioning; combustion; invention; new resources; to name a few, in addition to the older fields of development, which await the light of research and require scientific approach and execution.

To take note of the possibilities in these future fields and become interested in their unfoldment and promotion present far-reaching opportunities and involve the serious thought and practical treatment of the scientifically trained. They need the creative touch and resourcefulness of the engineering mind in order to satisfy the needs of mankind.

—Reprint from "Engineering Age" official publication of the Ohio Society of Professional Engineers.

WHEN MEN CONSPIRE

From the New York Times.

What are the healing trades coming to? One of the nation's leading pharmaceutical firms is caught in the toils of a fantastic conspiracy. The nation's big medical society is indicted as a monopoly. Strange though the story of Coster-Musica may be, it sounds even stranger to have doctors accused of working too closely hand in hand. The whole cynical tradition is the other way: doctors disagree and nature takes its course.

Bernard Shaw said a generation ago in "The Doctor's Dilemma" —and perhaps he got it from some earlier observer—that every profession is a conspiracy against the public. It has to be, in the sense that every association of men is to some extent a conspiracy against everybody outside the group. Its other name is loyalty. Since every man belongs to a number of groups other than occupational, it means that every man has to deal with a number of competing loyalties. This saves any particular conspiracy from running to excess.

HE WANTS A LICENSE

In a letter received by one of the State Boards of Engineering Examiners an applicant from a rural district writes:

"Engineering work is all I have ever *did* all my life and if I cannot carry on will have to close the office. In this office *is* all the maps and work. Hoping that my application will be given will meet your requirements for an engineering *license* and if there is any information *lacking* will gladly furnish it."

Travis Chapter of the Texas Society Holds Annual Recognition Dinner

Senator Redditt is sitting directly under the Society Emblem on the left. To the right of Senator Redditt, in order, are President Walter E. Seaholm, Dean T. U. Taylor, and Vice-President of the National Society J. W. Beretta.
(Photo by Boone Photo Co.)

The Travis Chapter of the Texas Society of Professional Engineers held its Annual Recognition Dinner at Austin in December, when 158 members and guests acclaimed the Honorable John Redditt, State Senator from Lufkin, and Honorable Augustine Celaya, State Representative from Brownsville, as authors and sponsors of the Texas Engineers' Registration Law.

Senator Redditt and Representative Celaya were presented with a framed certificate of appreciation from the Travis Chapter for their efforts in behalf of the Engineers, in fostering the Texas Engineers' License Law.

Vice-President J. W. Beretta of the National Society of Professional Engineers delivered a message to the assembled engineers from the National organization, and Carl L. Svensen, Chairman of the Texas State Board for Registration of Professional Engineers, furnished a complete report of the activities of the Board during its first year of operation.

Acting President and President-elect of the Travis Chapter, Walter E. Seaholm, presided as toastmaster for the occasion, while Vice-President-elect T. B. Warden introduced the honor guests.

Judge Yarborough's Address

The Honorable Ralph W. Yarborough, Judge of the Fifty-third Judicial District, addressed the assembly on "The Mutual Duties and Responsibilities of the Engineering and Legal Professions." In his address, Judge Yarborough asked for the cooperation of the Engineering Profession in presenting matters of law before the courts. He acknowledged the ability of the Engineers in the pursuit of their profession and suggested that the Engineers and the Lawyers would improve the court procedure if they would get together and establish a mutual understanding of each other's way of thought and speech. Paying a high compliment to the altruism of the Engineers, Judge Yarborough expressed a hope that the two professions would work together in the development of new laws and methods of government for the betterment of the nation at large.

The Travis Chapter Plan

This dinner, which was the third of its kind in the history of the Travis Chapter, is to be established as an annual affair. It is proposed to receive nominations, during the year, naming the individual whose efforts in behalf of the Enginering Profession are to be recognized. At the end of the year, the selection is to be made from these nominations and a certificate of recognition will be presented again, as was done this year.

By D. V. Purington

"HERE AND THERE"

(Continued from page 3)

RADIO PROGRAM

Our President of N.S.P.E., Engr. Perry T. Ford, broadcast over Station W-S-A-I and 126 associated stations, via Mutual Broadcasting System, at 6:30 P. M., Thursday February 9th, subject: "Engineers' Contribution to Civilization."

PUBLIC SERVICE—

Indiana—Two members of the Indiana Society of Professional Engineers were elected to the lower house of the Indiana Legislature in the November election. Congratulations to our Indiana engineers.

Ohio—Cincinnati Press announces Jan. 13th that City Manager Sherrill (an engineer) set up a Bureau of Traffic Research, and that Councilman Chas. P. Taft offers an ordinance placing at the head of the bureau a full time "traffic engineer," qualified by competitive examination under Civil Service at a salary of $5000.

Connecticut—From President Allen Hubbard of the Connecticut society comes the following: "In Bridgeport the Planning Board has called in Engineers Harry E. Harris, Claude T. Berner, and James W. Skinner of the C.S.P.E." President Hubbard is chairman of the committee now revising mechanical sections of the New Haven Building Code. Congratulations, Connecticut.

NEWS OF STATE SOCIETIES

Editor's Note: THE AMERICAN ENGINEER will carry reports of State and Chapter meetings in the issue succeeding their receipt. We must have copy by the 20th of the month preceding the month of issue. Copy received after that date runs the risk of not being on time.

NEW YORK

BRONX COUNTY CHAPTER

Colonel M. E. Gilmore, P. W. A. Regional Director, has announced the appointment of Engineer Paul T. Treutler of the Bronx County Chapter as chief resident engineer inspector on the East River Drive, New York City, estimated to cost $10,665,000. The work comprises a driveway along the East River Waterfront from 49th to 99th Street and includes bulkhead construction and viaducts.

C. F. Habekotte, C. A. Hodgman and W. J. McBurnie of Johns-Manville Inc., showed the new film "Heat and its Control" to President Rudolph C. Lang and the members of the Bronx County Chapter of The New York State Society of Professional Engineers at their regular monthly meeting at the Concourse Plaza Hotel, Thursday evening, January 5th.

Engineer William Gould was elected a member of the Chapter.

Engineer Walter G. Federlein, Chairman of the Committee on Old Age and Unemployment, showed a chart his Committee had prepared giving the rates for group life insurance which indicated how the rates increase rapidly and extensively between the ages of 40 to 60 to the great detriment of persons more than 40 years of age. The Committee is seeking means to rectify this condition.

REPUDIATES PROFESSIONAL ENGINEERS UNION

New York newspapers on January first reported the formation of a "Supervising Professional Engineers Union," chartered by the American Federation of Labor.

In response to inquiries that have been received, the New York State Society of Professional Engineers vigorously repudiates any thought that the Society has in any way participated in, or approved of, the formation of this "Union." On the contrary, the State Society has already recorded itself as fundamentally opposed to any idea of the unionization of professional men.

The State Society has communicated its disapproval to Edmund J. McCormick who is identified with the formation of the "Supervising Professional Engineers Union," and has promptly accepted his resignation from membership on the State Society's Committee on Practice Violations.

To All Interested Engineers:

For your information, study, and support, I submit herewith a draft of a proposed amendment to Section 1452 of the N. Y. State Education Law covering qualifications, examinations and fees for P.E. and L.S. licensure.

I believe that you will find that this proposed amendment has much to commend it. In general it serves to restate the present qualification requirements in more compact and convenient form while eliminating some troublesome present ambiguities and inconsistencies. There is one, and only one, new feature, however, and that is the inclusion (not as an additional requirement but as a recommended alternative preparation for which a compensating inducement is offered) of a suggestion of two years of pre-professional study in a college of liberal arts and sciences.

As you probably know, I have been giving many years of study to this question. Practically all who have studied the subject are agreed that there are now three things basically wrong with engineering education. These are (1) insufficient preparation of entering students for full benefit of an intensive professional education. (2) a too crowded curriculum for four years of study. (3) inclusion of insufficient cultural foundation for the proper equipment of a professional man. All of these three shortcomings can be relieved by a single solution, namely, the encouragement and the ultimate requirement of two years of pre-professional study in a college of liberal arts and sciences before admission to the engineering schools. I have discussed this proposal informally with a number of leading engineering educators, including Presidents, Deans, and Heads of Departments in engineering schools, and have found that many progressive and forward-looking engineering educators individually are in favor of the idea, although their organizations in the past have been less receptive.

I also find that a larger proportion than is generally realized of successful engineers and leaders of the engineering profession have gone through such training of their own initiative, and that many of them were graduates of liberal arts colleges before they entered engineering schools. Many of our fellow members are following this procedure for their sons.

As an illustration of how engineering educators are beginning to think along these lines, I refer you to the March 1938 issue of THE AMERICAN ENGINEER containing an article on "Breadth in Engineering Curricula" reprinted from the Journal of the Society for the Promotion of Engineering Education, by President Phillip C. Nash of the University of Toledo. From his study of engineering schools, he makes the following comment:

> "In other words, these schools are taking high school boys of eighteen, giving them a very stiff four year course with only one-sixth of their attention given to anything outside professional work. No other profession such as law, medicine, teaching, or the ministry dreams of giving so narrow a preparation for life. Probably no chemist, journalist, or graduate of a school of business administration could get such a narrow education at any college in the country. Are we justified in giving it to engineers?
>
> The pleas from the engineering educator are two: (1) We have to give as much engineering in four years as does our competing engineering school or all our students will go there. (2) Our graduates must have this advanced knowledge to get a job."

He further states:

> "I find little objective evidence to support the theory that a competent engineer cannot build up his theoretical and technical knowledge after he leaves college. Of course, he can build up his economic and cultural knowledge also, but he can do it much better perhaps if he has had some real foundation for such work during his college course. So it seems to me that our own investigation, the plea of President Roosevelt, the speeches of our leading engineering educators all point to a little more liberal engineering curriculum. Are we going to do anything more than talk about it?
>
> Of course there is one easy solution that may be directly before us now that engineering schools can be accredited and engineers licensed. That is to follow the lead of the law profession and demand two years of liberal arts work before undertaking the study of engineering at all."

I have come to the conclusion that registration and accrediting are the only agencies through which this desired improvement in engineering education can be stimulated. I realize of course that these things take time, but we can make a start by writing recognition of the desired improvement in preparation into our registration law. In order to obviate the objection that such addition of two years of educational preparation would unduly lengthen the training time of engineers, the only solution I can now propose is to offer a compensating inducement in the form of two years reduction in the final apprenticeship requirement before admission to examinations. In justification of such reduction of the internship requirement, I feel that the more mature and better equipped students entering the engineering schools will be more intensively benefited during their period of study in the engineering school, and will in the same measure be better prepared for profiting more intensively from the subsequent abbreviated apprentice period. You know, as well as I do, that some men can learn more from a year or two of practical experience on the job than other man can learn in four or more years of such experience.

The present numbered listing of qualification requirements in Section 1452 is misleading in that it does not indicate the normal requirement of engineering graduation. I believe you will agree with me that the numbered listing should present the normal or recommended preparation and that the paragraphs of exceptions should cover the alternate methods of preparation which we hope will be presented in a progressively diminishing percentage of cases. In my drafted amendment, I have kept this thought in mind and have endeavored to make the numbered listing indicate the recommended, preferred, and ultimately general method or program of preparation, covering the exceptions or alternates in a supplementary paragraph.

For comparison, please note that every medical school in the country requires 2 to 4 years of college work before entering the medical school and 43 states have written this requirement into the law. In 1916, sixteen States found it necessary to enact such legislation in order to bring the medical schools into line with the higher educational standards set up by the medical profession. 77 percent of all medical students now are college graduates before they enter medical school. The leading law schools require applicants to have a college degree before enrollment, and 29 States by law require two years of pre-legal college study.

In engineering, we are not ready to write such requirement into the law, but we can make a start by recording the improved preparation in the law as a desirable and acceptable alternative.

I shall welcome your comments, encouragement, and support on behalf of this desired legislation.

Faithfully yours,
D. B. STEINMAN.

PROPOSED AMENDMENT

New York State Education Law

Purpose: To clarify Section 1452; to eliminate obsolete provisions; to restate the present qualification requirements in clearer and more orderly manner; to record two years of pre-engineering college study as recommended normal preparation, and to encourage and recognize such preferred preparation by giving credit therefor in an equivalent reduction of the final interneship requirement so that the total period of preparation and training are not thereby lengthened beyond the present total. This amendment does not increase any of the present requirements.

Comment: The encouragement and recognition of two years of pre-engineering college training will serve to improve the effectiveness of engineering education and to raise it toward the graduate level of education in other professions. Moreover, it will provide the engineering schools with better equipped and more mature students. What is most important—it will serve to supply a foundation of liberal and cultural education which should be regarded as indispensable in the equipment of professional men.

Sec. 1452. Qualifications, examinations and fees.

For license as a professional engineer, evidence must be submitted that the applicant

1. Is more than twenty-five years of age;
2. Is a citizen of the United States or has legally declared his intention of becoming a citizen;
3. Is of good moral character;
4. Has satisfactorily completed an approved four-year high school course or the equivalent thereof as determined by the department;
5. Has satisfactorily completed two years or more of study in a college of liberal arts and sciences registered by the department as maintaining satisfactory standards;
6. Has graduated from an accredited curriculum of four years or more of study in a college or school of engineering registered by the department as maintaining satisfactory standards;
7. Has had two years or more of practical experience in professional engineering work of a grade and character satisfactory to the board;
8. Has passed the prescribed written examinations.

In lieu of the collegiate and professional educational requirements hereinabove specified, an applicant may be admitted to the written examinations upon presenting evidence of at least twelve years of practical experience in professional engineering work of a grade and character satisfactory to the board. Each year of study satisfactorily completed in a registered college of liberal arts and sciences may be accepted in lieu of one year of such practical experience, with a maximum of two years of such credit; and each complete year of study in a registered college or school of engineering may be accepted in lieu of two years of such practical experience, with a maximum of eight years of such credit.

For license as a land surveyor evidence must be submitted that the applicant

1. Is more than twenty-five years of age;
2. Is a citizen of the United States or has legally declared his intention of becoming a citizen;
3. Is of good moral character;
4. Has satisfactorily completed an approved four-year high school course or the equivalent thereof as determined by the department;
5. Has had six years or more of practical experience in land surveying work of a grade and character satisfactory to the board;
6. Has passed the prescribed written examinations.

Graduation from a registered college or school of engineering may be accepted in lieu of all or part of the land surveyor's examinations; and each complete year of study in a registered college or school of engineering may be accepted in lieu of one year of the specified practical experience, with a maximum of four years of such credit.

Examinations for license as professional engineer and as land surveyor shall be held by the Department twice each year in at least three convenient places in the state. Subject to the approval of the department, the board shall determine the subjects and scope of the examinations. Notwithstanding anything herein contained every applicant for license as professional engineer, otherwise required to take an examination, shall be required, in addition to all other requirements, to establish by written examination his competency to plan, structurally design and supervise the construction of buildings and similar structures. Each written examination may be supplemented by such oral examination as the department shall determine upon recommendation of the board.

The department on the recommendation of the board may waive specific qualification requirements, except as to age, character and citizenship, in the cases of applicants who are possessed of long established and recognized standing in the engineering profession, who have practiced lawfully for more than fifteen years.

Upon recommendation of the board and the payment of a fee of twenty-five dollars, the department may issue a temporary permit to practice professional engineering to an engineer who is not a citizen of the United States and who has not declared his intention of becoming a citizen but who submits satisfactory evidence of established and recognized professional standing in his own country and who submits certification as to character and qualifications from at least two duly licensed professional engineers of this state. Such temporary permits shall entitle the holder to practice professional engineering in this state but only in connection with the specific project for which it is granted, and shall be subject to the same restrictions regarding annual registration and revocation as a license issued as otherwise provided by this article. The annual printed list shall include a separate list of the persons to whom such temporary permits have been granted.

The fee for a license as professional engineer shall be twenty-five dollars, and the fee for a license as land surveyor shall be ten dollars.

If an applicant fails to obtain a license as a result of his first application or examination he may make a second application and may be admitted to a second examination without the payment of an additional fee.

Upon recommendation of the board the department may exempt from examination an applicant for license as professional engineer who holds a license or certificate to practice professional engineering issued to him upon examination by a legally constituted board of examiners in any other state or political subdivision of the United States or who holds a certificate of qualification issued by the national council of state boards of engineering examiners provided the requirement for such license or certificate was the full equivalent of the requirement in this state at the time it was issued and provided, further, that the applicant's record fully met the requirement of this state in all respects other than examination.

RHODE ISLAND

ELECTION OF OFFICERS

The Rhode Island Society of Professional Engineers held its annual meeting and election of officers January 9, 1939. The following officers were named for the ensuing year:

President—John E. Meade

First Vice President—Charles W. Stewart

Second Vice President—James J. McIntyre

Treasurer—Edward O. Greene

Secretary and National Director—Charles L. Pool

Director for three years—Leon L. Holland

Director for three years—Daniel O. Cargill

The Society gave a rising vote of appreciation to the retiring president, John V. Keily. Thruout Mr. Keily's term as president, the Society's work and membership have grown steadily in importance and strength. The Society has had 73 applicants of which 59 have been admitted to membership. The Society was influential in the enactment of the Registration Act for Professional Engineers and Land Surveyors. This is but the beginning of the efforts to elevate the professional and economic status of the engineer.

PENNSYLVANIA

NEW STATE OFFICERS

New Officers of Pennsylvania Society of Professional Engineers have been elected for 1939 as follows:

Engr. Robert Hall Craig, Harrisburg Chapter, President.

Engr. Prof. E. A. Holbrook, Pittsburgh Chapter, Vice President.

Engr. David Camilli, Pittsburgh Chapter, Director at Large.

Engr. Samuel I. Sacks, Philadelphia Chapter, National Director.

THE PENNSYLVANIA SOCIETY OF PROFESSIONAL ENGINEERS

This Society is not obligated to, associated with or aligned in any way to any Labor Party. The Society is strictly professional and similar to the Legal and Medical Professional Societies. Membership is limited to Engineers licensed to practice in this Commonwealth as Professional Engineers (Registered Surveyors are not eligible). The various local Chapters (Philadelphia, Pittsburgh, Harrisburg, Lehigh Valley, Reading, Erie, Midwestern Pennsylvania and Wilkes-Barre) comprise the "Pennsylvania Society of Professional Engineers" with headquarters at Philadelphia. The various State Societies (Twenty two at present with others being formed) constitute the "National Society of Professional Engineers" with headquarters at Washington, D. C.

There are no initiation fees. The dues are $7.50 per year, which include the dues to your local Chapter, State and National Societies, and the national publication the AMERICAN ENGINEER. You automatically become a member of the State and National Societies, when you are accepted as a member of your local Chapter.

JOHNSTOWN CHAPTER

The Pittsburgh and Harrisburg Chapters organized a new Chapter at Johnstown, Pa., on January 28, 1939. The organization meeting was held at the Fort Stanwix Hotel in Johnstown. Engineer Horace S. Bracken was the Temporary Chairman, Engineer Irvin H. Geiger was Toastmaster and Engineer Robert Hall Craig, the Principal Speaker.

Engineer Fred H. Dechant of the Reading Chapter (President of the State Society in 1937). Engineer Alex Hutchinson (President of the State Society in 1938) as well as members of the other local Chapters attended.

THE LEHIGH VALLEY ENGINEER

Lehigh Valley Chapter Pennsylvania Society of Professional Engineers
Issued Monthly by the
Publication Committee—Engineer Hale Sutherland—Chairman

THIRD ANNUAL MEETING

The 1939 Annual Chapter Meeting was held at the Elks Club, Allentown, Pa., on January 13.

Engineer Alfred E. Roche, President of the New York Society of Professional Engineers, delivered the Annual Chapter Address. His subject was

"ENGINEERING PRACTICE AND ITS FUTURE"

Engineer Alfred E. Roche, City Engineer and Superintendent of Public Works of the City of Troy, N. Y., during his term of office as President of the New York State Society, has inaugurated many advanced features in the development of the services of the New York State Society of Professional Engineers to the profession at large. His untiring efforts for the advancement of the profession have led to effective steps having been taken in the municipalities in the State of New York for the perfection of the technique of the administration and enforcement of engineering laws of that State. A long range program of legislation to further strengthen the New York State Engineering Laws is in the process of further development, under his direction, for presentation to the forthcoming legislative session.

The Meeting Committee arranged with Station WCBA to broadcast Engineer Roche's Address between 7:30 and 8:00 P.M.

The Mayors of the three largest cities in the Lehigh Valley, Allentown, Bethlehem, and Easton, were guests of the Chapter at this Meeting.

The following Resolution was offered by Engineer Carter, and seconded by Professor Hale Sutherland, Lehigh University, at the regular meeting of the Lehigh Valley Chapter in Allentown, in December:

> "BE IT RESOLVED THAT The Lehigh Valley Chapter is of the opinion that the State Society, either through a single representative or a suitable Committee to be appointed by the State Board of Directors, as their judgment dictates, confer with Governor-elect Arthur H. James and the political leaders of the State, on the advisability and legal necessity of appointing Registered Engineers to all executive or administrative positions in responsible charge, where such positions require engineering knowledge, training and judgment, all in accordance with Acts of Assembly now in force."

This Resolution was forwarded—the Secretary reports—to the State Secretary and all Chapter Secretaries throughout the State. He also forwarded copies of this Resolution to members of a Special Local Committee, who, in turn, will contact public officials in the Chapter territory. The Special Committee consists of:

Engineer F. C. Peters—Carbon County
Engineer H. T. Carter—Monroe County
Engineer J. B. Walker—Lehigh County
Engineer V. W. Anckaitis—Northampton County

The Board of Directors approved Engineer Nagy's recommendation that beginning with the next issue of *The Lehigh Valley Engineer,* the Chairman of every Committee shall report the activities in his respective Committee An open forum will also be assigned for contribution from Members.

NEW MEMBERS

A cordial welcome is extended on behalf of the Chapter to the following New Members:

ENGINEER MARVIN E. KING, Telford, Montgomery County, Pa. He was recommended for membership by Engineer Anckaitis.

ENGINEER JAMES L. DODGE, Hotel Allen, Allentown, Lehigh County, Pa. He was recommended for membership by Engineers Pidcock, Lohr, and Anckaitis.

ENGINEER LESTER STANLEY ENGLISH, 605 Diehl Ave., Bethlehem, Northampton County, Pa., He was recommended for membership by Engineers Ramage and Anckaitis.

ENGINEER W. WILSON, Delaware River Bridge, Easton, Northampton County, Pa. He was recommended for membership by Engineers Pidcock and Anckaitis.

ENGINEER H. H. RAHN, New Jersey Zinc Company, Palmerton, Carbon County, Pa. He was recommended for membership by Engineers Pidcock, Peters, and Ramage.

OFFICERS NOMINATED FOR 1939

At a recent meeting of the Nominating Committee held at Allentown, the following were agreed upon as the official nominees for the vacancies occurring according to the Constitution:

President.....J. Morrow, Catasauqua
Secretary.....V. W. Anckaitis, Easton
Treasurer.....R. E. Huthsteiner, Allentown
State Director (1 yr.).....Charles Lehr, Bethlehem
Chapter Directors (3 yrs.).....J. Gaffney, Catasauqua
M. E. Boyer, Palmerton

ILLINOIS

JOHN R. LONGLEY WINS THE ILLINOIS AWARD

John R. Longley, member of the Illinois Society of Engineers, engineer for the greater Peoria Sanitary District, was presented with the ILLINOIS AWARD, at the 54th Annual Banquet in Springfield on the evening of Friday, January 27. The awards Committe, under the chairmanship of Paul Hansen, selected Mr. Longley as the recipient of the Award because of his paper. "The Gas Power of the Greater Peoria Sanitary District." Mr. Longley was presented to President Walraven by Mr. Hansen. President Walraven made the Award.

Previous recipients of the Award have been:

W. W. Mathews—"The Galesburg Sanitary District"—1932.
W. B. Walraven—"Development of Power from Sewage Sludge Gas"—1933.
M. B. Reynolds and A. E. Gorman—"Chicago's Water Pollution Problem—Past and Future"—1934.
A. C. Stanfield—"Some Features of the Flora, Illinois, Water Supply System"—1935.
W. E. Stanley—"Cost Considerations in Design"—1936.
S. M. Wood—"The Cycle of the Great Lakes"—1937.
L. C. Whittemore and N. E. Anderson—"Design of the Sewage Treatment Works of the Sanitary District of Chicago"—1938.

INDIANA

I. S. P. E. NEWS LETTER

Issued by the Indiana Society of Professional Engineers Inc.
Editor: K. B. Wolfskill; Operations Mgr. W. A. Miller; Circ. Mgr. G. L. Knoll

SECOND CONVENTION SUCCESS

The second annual convention of the Society, held in December at the Hotel Lincoln in Indianapolis again proved the solidarity of the professional engineering group in the state, the enthusiasm of the group in working toward the improvement of the profession and the interest in the contribution of the group to the welfare of the society as a whole.

The morning business sessions, following the breakfast meeting for the committee chairmen, was opened by Pres. Cohen at 10 a m. with about 175 engineers present. Society affairs were discussed, reports from the officers and standing and special committees given, and the preliminary report on resolutions given. Vice-Pres. Schutt presided over the second of the morning sessions.

The afternoon sessions, consisting of addresses by engineers and educators, were presided over by D. L. Warren, Pres. of the St. Joseph Valley Chapter and Vice Pres. M. G. Johnson.

DeWitt S. Morgan, Superintendent of the Indianapolis Schools, speaking on "The Economy of Human Resources," brought out the likeness between the operation of a school system and that of a factory converting raw materials into a very complex finished product, but pointed out the differences in the educational process due to the variability in the raw material, the child.

T. A. Dicus, Chairman of the State Highway Commission, addressed the group on "The Engineer in Public Service," and pointed out the need for trained, well qualified engineers with integrity and character in the various departments and functions of government in a complex civilization.

Dr. Donald B. Prentice, Pres. of Rose Polytechnic Institute, spoke on "The Engineer and the Abundant Life." He discussed the contribution that engineers must make to our developing civilization, and his belief that the engineer must expect to secure the opportunity and responsibility for bringing a more abundant life to society, slowly and in proportion as he wins public respect and confidence.

The banquet, held in the Travertine Room of the hotel, was the feature of the convention. Nearly 250 engineers and guests were present. John W. Wheeler, Asst. Chief Engineer of the Burlington Lines, was the principal speaker and drew on his own experience and background in developing his thoughts on the engineer and

his place in and relationship to the community. He stressed the value of friendship in the career of the professional man, and indicated his belief that engineering organizations in the public service should be administered on a merit basis, without political or other preferment, in order that a "career service" could develop among those who make public service their life work.

President Perry T. Ford of the National Society of Professional Engineers was present at both the afternoon and evening sessions, and spoke briefly at the banquet.

Engr. Clyde Walb, Pres. of the Anthony Wayne Chapter, presided and Fred Cunningham, former Pres. of the Indiana Highway Constructors, served as toastmaster.

The 1939 annual meeting of the Indiana Engineering Council, of which the Society is a part, will be held on Saturday, Feb. 11th at the Hotel Severin in Indianapolis.

—

Word has been received that the East Room of the World War Memorial has been reserved for the use of our society on the 3rd Thursday of each month in 1939. This is the fixed date of our monthly meeting and no other notice will be sent to the membership, except an announcement in the News Letter, unless circumstances cause a change in the date.

PRESIDENT'S REPORT TO CONVENTION

In his annual report, Pres. Cohen reviewed the activities of the Society for the year, and those which had developed during the year in order that the needs of the membership might be served. With over five hundred members, we have the largest membership of the engineering societies and groups of the state. He indicated that our accomplishments and growth this far are but the beginning of the long range development of the Society, and show what can be done by an aroused profession working in an organized manner for a common cause. That every branch of the profession, every industrial group, engineers in public service and those in private employ, all have problems to solve and that the Society will provide leadership to those who give it active energetic and moral support in "carrying on" toward the objectives, the solution of those problems. He stressed the legislative program of the Society, the educational program on registration which is to be carried on cooperatively with the Registration Board; and the necessity for enforcement in order that we may achieve the professional status and earn the public respect that we deserve. The report closed with a challenge to the Society to continue the cooperation and coordination of our efforts for the common good, the making of a finer profession.

NEW CITY ENGINEERS

Engr. M. G. (Ole) Johnson, vice president of the Society and member of the Registration Board, was recently appointed City Engineer of Indianapolis. He brings engineering experience and training to his new position, having been with the City Engineer's office for 12 years, the last 8 of which were as Senior Assistant City Engineer. Previous to his city work, Engr. Johnson was in charge of the road design department of the State Highway Commission.

Engr. Val McLeay, member of the Society, until recently Secretary-Engineer of the City Plan Commission, has been appointed as Assistant City Engineer of Indianapolis.

Engr. W. P. Cottingham, member of the Calumet Chapter of the Society, was recently named City Engineer of Gary. He comes to his new post from that of engineer for the Gary Railways, and has served as City Engineer under several previous administrations.

RESOLUTIONS ADOPTED AT CONVENTION

The Society, acting on the report of its Committee on Resolutions, adopted the following resolution on the city manager form of municipal government.

WHEREAS, the method of municipal governmental administration known as the City Manager Plan is and has been an efficient, effective and desirable method of administering the affairs of a municipality and

WHEREAS, there is now a movement under way in this state working toward legislative or constitutional action at the State legislature to provide such municipalities as desire to avail themselves of this form of government the opportunity to do so,

NOW THEREFORE, be it resolved that this Society places itself on record as favoring such legislative or constitutional action as will provide an effective opportunity for municipalities in Indiana to avail themselves of the City Manager form of government if they wish to do so and

BE IT FURTHER RESOLVED that this Society actively support such legislative or constitutional action.

The Society also adopted a resolution on the recent death of one of its members, Engr. Harvey A. Tutewiler. The St. Joseph Valley Chapter presented a resolution that the State Society work for the passage of legislation requiring that County Highway Superinendents, County Engineers and City Engineers, Water & Power Superintendents and Street Commissioners for Class 1, 2, 3 Cities be registered professional engineers. This resolution was referred to the legislative committee for consideration and action.

WATKINS LEAVES

E. Wayne Watkins, Editor of the News Letter and active member of the Public Relations Committee of the Society, has resigned as estimating engineer with the bridge department of the Highway Commission to accept a position with the U. S. Engineer Office at Pittsburgh, Pa.

LEGISLATIVE PROGRAM

The legislative program of the Society is expected to be presented at the January meeting. The Legislative Committee has developed a four point program upon which the major emphasis is to be placed.

1. The first of the measures provides for a merit system for the engineering service of the State Highway Commission. The bill, as written, provides for appointments to and promotions in the service on the basis of merit and fitness, dismissal made only for just cause, with a provision for appeal from the decisions of the Commission, and prohibits discrimination or favoritism because of political or religious opinions and activities. The bill also provides that the Commission is to set up classification plans and salary schedules for the employees in the engineering service of the Commission and that rules and regulations for the operation of the classification plans and salary schedules shall be prepared and promulgated by the Commission.

2. A second measure provides that a duly elected county surveyor who is a registered professional engineer shall have a salary two times that provided for the county surveyor in the various counties, instead of one and one half times as provided by the present law. The Legislative Committee feels that this measure is the most practicable one for the welfare of the County Engineers group.

3. The engineers in the service of the cities of the state are interested in a bill which is now under preparation by a special committee for this purpose, appointed some time ago by Pres. Cohen.

4. Feeling that the welfare of engineers in general can be improved by raising the standards and scope of application of the License Law, the Committee has indicated its approval of the budget increase for the Registration Board, in order that an enlarged educational and enforcement program can be carried out by the Board as proposed by our Society.

Each member of the Society is urged to accept as his personal responsibility the contacting of his own, and other, representatives in the Legislature in behalf of the measures proposed.

Support of the membership should also be given to workable legislation for the City Manager form of government, as reported elsewhere in this issue, and to the budget provision for continuing the mapping of the state.

RECOGNITION

Believing that a large measure of the success of a voluntary organization, such as our Society, is due to the efforts of individual members in the matters concerning the group, and that such efforts should have appropriate and public recognition, the News Letter nominates as I. S. P. E. Men of the Year:

Wayne Watkins, for his efforts in developing and editing the News Letter and for his handling of the publicity for the annual convention.

Don Walker, whose Enforcement Committee turned in the best committee effort of the year.

M. G. (Ole) Johnson, who for the second consecutive year served as general chairman for the annual convention. The program, the registration of nearly 400 engnieers from all parts of the state, and the enthusiastic reaction of the members, all indicate the success of the efforts of Engr. Johnson and his committee.

NEW JERSEY

THE HUDSON ENGINEER

Published Monthly by the
Professional Engineers Society of Hudson County, N. J.
A Chapter of The New Jersey Association of Professional Engineers and Land Surveyors

JAMES F. KELLY, *President*
WILLIAM G. CHRISTY, *Vice-President*
RAYMOND F. LEUTHY, *Secretary*
FRANK C. SCHLINDWEIN, *Recording Secretary*
NORMAN B. NEWCOMB, *Financial Secretary*
JAMES A. FOLEY, *Treasurer*
HUGH C. CLARKE, *Trustee*

JANUARY MEETING

Monday evening, January 23, 8:00 p. m., at Public Service Auditorium, Journal Square, Jersey City, N. J. Guest Speaker, Mr. John Adams of the Otis Elevator Company. Topic, Vertical Transportation.

TRAFFIC STUDY OF HUDSON BOULEVARD WEST

Note: This study was made by the Public Affairs Committee, Otto A. Knipping, Chairman; George Yeomans, Frank J. Radigan, James A. Heffernan, Edward Walker, and the Chapter Trustee, Hugh C. Clarke.

In considering the traffic problem of the Hudson Boulevard West, let us first review its history, location and construction.

Early in the 1890's the present Boulevard West was constructed. Very few revisions were made in its layout, the major changes being at Veterans (Journal) Square, Jersey City, and the S curve elimination at the Avenues A and B intersection at Bayonne.

It it apparent, in reviewing the location of the Boulevard West, that it was originally laid out as a scenic road. Reference to the property maps show that the Boulevard included existing north and south streets which generally followed the westerly brow of the Palisades. These streets were widened and connected by curves to form a continuous road from the Kill Von Kull to the Bergen County line.

We can appreciate that at the time the Boulevard was planned, almost fifty years ago, its planners were contending with horse and buggy traffic and could not be expected to foresee the volume and speed of the present day automotive traffic.

The Boulevard West has two widths. South of 32nd Street, Union City, it is generally 100 feet wide, 60 feet being the roadway between curbs and each sidewalk 20 feet wide. North of 32nd Street, the 60 foot roadway is flanked by 10 foot wide sidewalks.

In about 1922, with increasing traffic load and its accompanying increase in collisions between cars traveling in opposite directions, the present center islands were constructed, the purpose being to separate traffic. This was more than fifteen years ago. These islands now exist in Bayonne, the Greenville section of Jersey City, and in North Hudson, north of Seventh Street, West New York. The islands have a vertical curb, are six feet wide, and are located in the center of the roadway. The street lights are located on the islands. The north and south bound lanes are each 27 feet wide.

Considering the North Hudson Section of the Boulevard, which has the greater traffic problem, there exists the six foot wide center islands, twenty-seven foot wide north and south traffic lanes, and ten foot wide sidewalks. The Boulevard is intersected by many cross streets, has sharp curves and comparatively steep grades.

The following traffic tie up occurs quite often. A bus had stopped diagonally to the curb at an intersection to discharge some passengers. A car parked too close to the corner had prevented the bus from pulling into the curb. A passenger car which had been traveling in the same direction as the bus stopped at the intersection and was waiting for a chance to make a left turn. Although the Boulevard traffic had a green light, traffic was completely stopped in this direction until the bus moved ahead. This type of tie up creates the maximum interference with smooth traffic flow and is one of the problems to be considered.

The center islands today still serve the one purpose for which they were intended, that is, to separate the opposite direction traffic. These islands are now too narrow for proper traffic control at intersections in North Hudson because of the many left-hand turns being made off the Boulevard. Many crossovers and intersections did not exist at the time the center islands were constructed. This was the result of the opening of many new streets, especially in the vicinity of the old Guttenburg race track.

A car making a left turn does of necessity extend into and across one or both of the north and south bound lanes, as the islands are only six feet wide, while the turning car is approximately fifteen feet long. The center islands have a low vertical curb, which is not safe. Cars coming in contact with the curb have a tendency to throw to the left across the island. This is possibly the reason why many cars are driven two or three feet away from the island curbs. These curbs do not reflect light well.

It is apparent that the present center islands do not satisfy the requirements of traffic today. The sixty foot width between curbs is the maximum possible as no space is available for widening. The sidewalks are ten feet wide and do not allow a cutoff. Therefore, any revisions must be made within the bounds of the present curbs.

Considering the possibility of replacing the present islands with islands eighteen feet wide, which should satisfy the demands of left turning traffic but at the expense of through traffic, there would be only two lane traffic north and south bound where at present it is three lanes each way. While the wide island and two lane traffic each way serves State Highway traffic satisfactorily, there being wide road shoulders to accommodate bus stops, parked and disabled cars, it is doubtful that it would serve the demands of Boulevard traffic. Any parked or disabled cars together with bus stops on the Boulevard would slow up traffic considerably. The reason an eighteen foot island is used is the fact that a left turning car or one in cross traffic would have sufficient space to stand crosswise at an intersection without extending into and interfering with north and south traffic. The cross traffic condition would occur when the traffic light system is not working. The eighteen foot width allows about a one and one-half foot clearance on both front and rear of a car. This wide island type of layout should be applicable in sections of the Boulevard which have a present width of one hundred feet between building lines and where a sidewalk cutoff is possible.

The only apparent solution to the congestion which exists in North Hudson is that the center islands which now present a hazard, together with the center lamp posts, be removed. A narrower island would serve the purpose of the present islands, and which should be constructed with a State Highway type safe sloping curb. A separating strip of approximately two feet in width, as used on Route 6 at Bendix on the overpass of the Erie R. R. and Route 2, would give the maximum north and south bound lane width. The application of this type would necessitate the relocation of all manholes which at present are in the center of the street. Continuity should be the theme in narrow island layout. At best, any narrow island is a misfit as far as proper traffic control at intersections on the Boulevard is concerned due to the extremely short distances between intersections.

A definite relief should be the result of restricted parking along the Boulevard, especially at bus stops. The buses should stop within designated bus stop areas of approximately ten foot width and of sufficient length to allow the bus to be properly driven in. Traffic checks at corners where most congestion occurs might suggest some limitation or control of left turning traffic.

Present island construction does not offer a safe area for pedestrians who are stranded in the center of the Boulevard, as the islands are not in the line of the normal cross walks. For pedestrian safety the islands should extend up to the line of the curbs of the intersecting street.

Where narrow islands are constructed, a safety zone designated by two lines about four feet apart and in the path of the normal cross and extending about four feet either side of the center line should be satisfactory. This type of cross walk is used on Washington Street, Hoboken, and it is interesting to watch how pedestrians head for this area when crossing. Pedestrians seem to ignore cross-walks which are painted from curb to curb.

ELECTION OF OFFICERS

At the annual meeting held on December 19, 1938, in the Public Service Auditorium, the following were re-elected unanimously to serve the Society for 1939.

JAMES F. KELLY ..... *President*
WILLIAM G. CHRISTY ..... *Vice-President*
RAYMOND F. LEUTHY ..... *Secretary*
JAMES A. FOLEY ..... *Treasurer*

Frank C. Schlindwein, Editor of *The Hudson Engineer*, was elected to the office of Recording Secretary, and Norman B. Newcomb, Chairman of the 1938 Membership Committee, to Financial Secretary.

NEW CONSTITUTION AND BY-LAWS

The revised Constitution and By-Laws were read at the annual meeting by Alvin Ruefer, Chairman of the By-Laws and Fees Committee, and approved by the membership. It was gratifying to note the interest shown by the exceedingly large turnout.

This committee, which was reappointed by the President for this year, will now make a study and plan a schedule of fees that will embrace all branches of the Engineering Profession.

The Constitution and By-Laws is ready for printing, and shall be distributed in booklet form to the membership at the February meeting.

MEMBERSHIP

The 1938 Membership Committee, Norman B. Newcomb, Chairman, John D. Denno, John L. Hodges, Edward E. Saphore, and Otto Scholl reported eleven full memberships and fifteen associate memberships during the year in 1938.

The committee submits the following recommendations for the benefit of the Society and the new 1939 Membership Committee.

1. Try to keep alive the spirit of growth by making the Membership Committee an active up-and-doing committee.
2. Assist in every way possible the other committees to accomplish their ends and make the Society a smooth running organization, attractive to new members.
3. When a new man is introduced as a member make sure that he is given a personal introduction to the Society at a meeting.
4. Make every effort to obtain a large percentage of full members, as well as associate members, because the full members are the voting members.

MEMORIAL

Resolution adopted at a meeting of the Kings County Chapter of the New York State Society of Professional Engineers, December 15, 1938.

WHEREAS, The passing of Engineer Edward A. Byrne, a Charter Member of the Kings County Chapter of the New York State Society of Professional Engineers, has terminated a half century of distinguished achievement in engineering work; and

WHEREAS, He dedicated his entire lifetime to the public service; and

WHEREAS, His outstanding ability is attested by the conception and execution of vast number of notable public projects in the City of New York: THEREFORE, BE IT

RESOLVED, That the Kings County Chapter of the New York State Society of Professional Engineers feels deep regret at the passing of a most distinguished member, and extends its sincere sympathy to his family in their bereavement: and BE IT FURTHER

RESOLVED, That this resolution be spread upon the minutes of the Kings County Chapter, and a copy hereof be transmitted by the Secretary to his family.

OHIO

THE CLEVELAND ENGINEER

JANUARY ENGINEER'S MEETING

Case Club, Thursday, January 19, at 8 p. m. "Rehabilitating The Engineer" by Professor Jay L. Otis, formerly of Department of Labor, Washington, D. C. Recently appointed to staff of Cleveland College in charge of Industrial Psychology and Vocational Guidance. Prof. Otis told of plans being put into effect at Washington which may have a decided effect on all engineers. Also Johns-Manville Sound Film "Heat."

BOARD OF DIRECTION

The Board of Direction has held two meetings since the last issue of the *Cleveland Engineer*. Among the items discussed were:

1. The Civil Service Charter Amendment.—The amendment was endorsed, and we feel satisfied that our support was important in the close vote that carried it at the election Nov. 8.
2. Communication from the Cincinnati Chapter concerning the practice of a non-registered engineer in Cleveland and Cincinnati.—This communication was referred to the Professional Relations Committee for investigation and action.
3. Contributions to the Society's reserve fund.—It was decided that a committee be appointed to encourage contributions to this fund and to assist the Secretary in collecting the same.
4. Publicity.—The Publicity Committee was authorized to engage an expert to enable them to extend their activities.
5. Salary Schedule.—A commitee was authorized to promote the adoption of the Ohio Society of Professional Engineers salary schedule for City of Cleveland technical employees.

CONTRIBUTIONS

Since the membership of our Society is limited to registered engineers and surveyors it cannot be subsidized by non-member (special) interests.

However, to carry on more effectively the work of enhancing the position of the professional engineer and surveyor in the eyes of the public, an emergency fund is desirable. For this reason the Board of Direction last year gave the members the opportunity to make individual contributions to the Society. Twenty-four members contributed $130.00 in 1937-38. So far this year twenty-two members have contributed $86.00. At its meeting on May 31, 1938, the Board of Direction earmarked individual contributions by putting them in a savings account to be used only on Board of Direction approval for unusual acivities in behalf of professional engineering. The far sightedness of the Board of Direction in creating a "nest egg" is commendable. It puts the Society in a financial position to defend the profession (without the delay of raising funds) against attacks and to "prosecute" local and State legislative programs in behalf of the profession. Legislative activities, to be effective, must often be started on a moment's notice.

Should any contributor not be in accord with Board of Direction's policy, the Board will use his contribution as he designates.

PERSONALS

Professor George E. Barnes addressed Canton Regional Society of Professional Engineers December 13, 1938, at Courtland Hotel, Canton, Ohio.

William C. Kammerer addressed Lake Erie Society of Professional Engineers December 8, 1938, at Graystone Hotel, Elyria, Ohio.

FROM CINCINNATI

The Cincinnati Chapter has been active and effective in its efforts to secure compliance with the Registration law. Its investigation of non-registered individuals who advertise as Engineers has had outstanding success.

In anwer to our letter of inquiry on methods and results, Engineer Edward B. Fauntleroy, Chairman, Registration Committee of Cincinnati Chapter, says:

"At the request of Mr. Edward Larson, our Chapter Chairman, I am giving you a brief outline of the procedure followed by the Registration Committee of the Cincinnati Chapter in dealing with non-registered individuals advertising as engineers or surveyors.

"To begin with, it was assumed that the Registration Act forbids two things:

(1) To do any engineering work designing or consulting, or advising along technical lines without registration.

(2) To offer to do, advertise to do, or hold out to the public that there would be done engineering work, without registration.

"Going further, it was assumed that the use of any title of engineer or engineering designation, without registration, constituted violation number 2, also advertising as an 'Engineering Company.' For example, if a firm acted as manufacturers' agents and was styled 'Ajax Engineering Co.', without registration of the responsible head or heads, it was looked upon as not complying with the Act. In contacting such companies, the first excuse offered by them is that they are not engineers, but are only selling agents. When asked to discontinue the use of the designation 'Engineering Company,' they reverse their position and say that they are engineers, but do no engineering. It sometimes requires as many as five letters to one company, before they either break down and register or refuse to do so. When they refuse, they generally have given enough evidence in their letters to warrant prosecution under the Act. Enclosed is a copy of correspondence with the —— Service Co., which is typical.

PROFESSIONAL RELATIONS COMMITTEE

Director F. C. Tolles reports that the Professional Relations Committee is giving consideration to developing a Code of Practice. This is described as a working code of particular and practical rules to supplement the general tenets of the Code of Ethics. The Committee will appreciate suggestions as to the ground to be covered, points of issue, and typical instances or cases of doubtful practice. Names are not necessary, but the circumstances should be detailed sufficiently to permit the Committee to outline hypothetical cases. Address D. Russell Terrill, Committee Secretary, 179 Stanford Rd., Berea, Ohio.

Some of the professions with years of professional organization background have through the many cases that have come before them developed Codes of Practice which supplement their Codes of Ethics. Codes of Ethics must of necessity be general. Codes of Practice are specified and cover specific problems. On several occasions our Committees have been handicapped by the lack of a Code of Practice. It is true that Codes of Practice are developed from actual cases. To start a Code of Practice we must use hypothetical cases until violations are prosecuted and adjudicated.—Ed.

NEW MEMBERS

We welcome into our Society and introduce to the membership the following new members:

W. Jeff Myers, 2619 Princeton Rd., Cleveland Heights.
Carl F. Prutton, Case School of Applied Science.
Arthur Simon, 911 Thornhill Dr., Cleveland.
Sanford Simon, 3436 Superior Park Dr., Cleveland Heights.

OKLAHOMA

ELECTION RESULTS

The report of the Canvassing Committee appointed to count the votes cast in the recent election for five members of the Board of Directors of the Oklahoma Society, of Professional Engineers, to fill the five terms expiring in January, 1939, announces the following successful candidates:

S. Paul Barnes, State Highway Department, Buffalo, Okla.
C. K. Bullen, Dist. Engr., W. P. A., Okmulgee, Okla.
Stanley Learned, Phillips Pet. Corpn., Bartlesville, Okla.
Van T. Moon, Chief Engr. State Highway Department, Oklahoma City.
Wm. R. Wooten, Asst. City Engr., Tulsa.

The new directors replace the following, whose years of service will be a lasting memory in the Society's annals; much of the present accomplishments of the Society are directly due to their unstinted efforts:

Lee M. Bush, Oklahoma City.
J. St. Clair Clark, Oklahoma City.
W. M. Shibley, (First President), Tulsa.
W. Claude Sale, (Ex-President), Oklahoma City.
F. G. Tappan, Norman, Okla.

Engineering Planning In Its Relations To Agricultural Planning

(Continued from page 8)

corn market; thus he receives a higher return for his entire crop. However, should one suggest this same procedure or plan for other crops, there is an immediate suspicion of unfair consideration of the farmer's plight.

With cotton the situation might be the same. Some in the cotton industry suggest that the cotton surplus problem cannot be attacked by processing studies, but only by new applications of the fabric, since a diversion of cotton into processing would not increase the activities in the already constructed mills fabricating yarns and textiles from the fibres. That is true; but if processing used up low-priced cotton, then the aggravating surplus of low-priced cotton would be eliminated, and the return on both crops would be his salvation. The same may be applied to apples, potatoes and other farm products.

Engineering is the application of science to things people want, either fabricated or processed. Our cotton, corn, potatoes, and rice cannot depend solely upon fabrication, but also depends upon processing. It appears that the cooperation of the engineer in the councils and in the laboratories to seek the answers to the agricultural problems will aid in agricultural planning.

Our government is designed supposedly so as to be responsive to public opinion. In this form, our government is called upon to decide important technical matters most of which are complex, involving pure scientific research, economics, sociology and applied science, or engineering. But the government has been accustomed to call upon the engineer only as a last resort.

The engineer has worked hand in hand with the pure research scientist, and he attempts at all times to join with the economist and sociologist and the politician to grasp problems in their entirety. His association with the agriculturist is established. To further the cause of mankind, as a professional man, he must speak boldly and to insist upon being heard; he should be able and willing to speak true opinions on the complex technical affairs of the day without prejudice and with freedom from hampering control.

It is recalled that many of our chemical industries had their origin on the farms, and when the demand for the processed materials become too great, the artisans or guild workers, forerunners of our enginers, had to take over the task of converting the land produce into readily usable commodities for the conjested urban communities. The same situation exists in the same specialized sense. Today, the farmer, or the specialized agriculturist, needs the help and cooperation of the man trained in planning, the engineer, to effect a change of agricultural planning—for the farmer to do his own planning, and to apply the engineer's scientific method of planning to an agricultural planning for permanency instead of for emergency.

Do You Know

(Continued from page 12)

Three American schools of architecture (Yale, M.I.T., and Princeton) admit students by *examination* solely. All the Canadian schools take the same stand; Toronto requires "honor" grade standing in addition.

Leaders in the architectural profession are opposed to a university being "a place where the minimum of education is given to the maximum number of students."

33 of the schools of architecture are departments in colleges of engineering.

In the various States, only from 25 to 50 percent of the registered architects have college or professional degrees.

About 60 percent of the members of the A.I.A. are graduates of approved schools. Many architects are registered in 12 or more States for out-of-state practice.

In 1935 to 1937, a large proportion of architectural registrations in the various States were in suspense for non-renewal. (In one State, 97% were in suspense.)

The leaders of the architectural profession and their leading publications are recommending "a reduced number of schools of architecture."

They are recommending that the education of the architect should include economics, management, living conditions, financing, systems of government, social orders, town planning, etc.

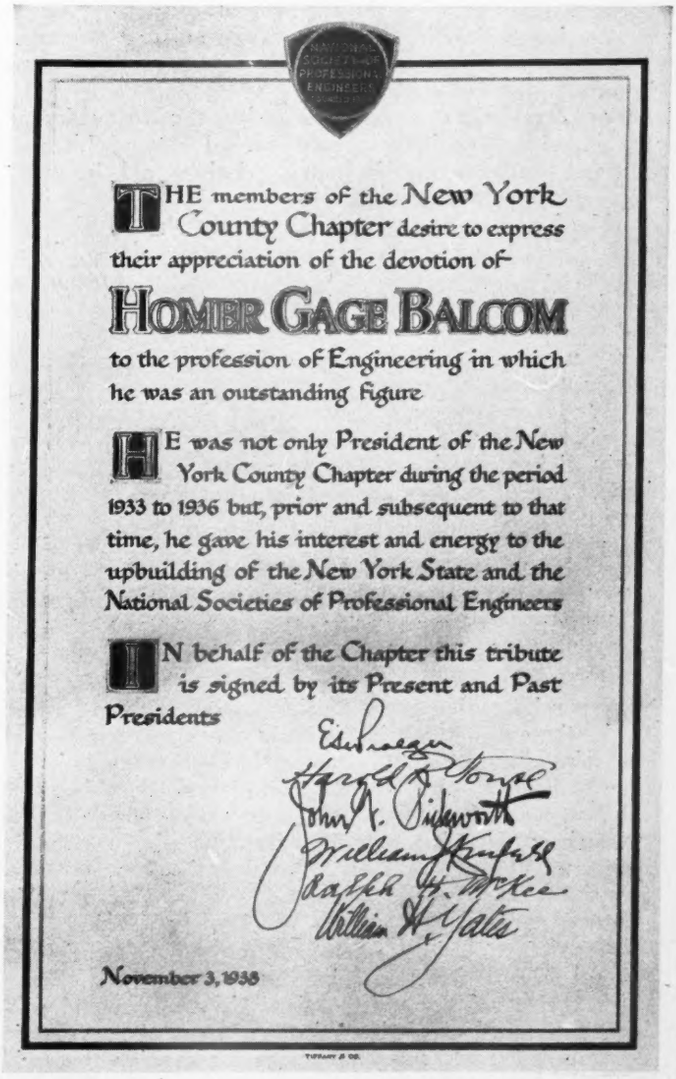
They are recommending that architects be trained for reality, and for structural design, with less emphasis on aesthetics and decoration. "Because architecture has been excessively concerned with decorative questions, there has been almost complete neglect of improvements for our cities and neglect of problems of planning for improved living."

Almost without exception, all members of the American Institute of Architects are registered architects.

77 percent of the registered architects in the U.S.A. do not choose to join the A.I.A.

No man is an architect unless and until he is registered by his State Board.

(Acknowledgment: Data excerpted from a report "Professional Recognition in the Field of Architecture" prepared by A. D. Hinckley for the Committee on Professional Recognition of E.C.P.D.)


THE members of the New York County Chapter desire to express their appreciation of the devotion of
HOMER GAGE BALCOM
to the profession of Engineering in which he was an outstanding figure
HE was not only President of the New York County Chapter during the period 1933 to 1936 but, prior and subsequent to that time, he gave his interest and energy to the upbuilding of the New York State and the National Societies of Professional Engineers
IN behalf of the Chapter this tribute is signed by its Present and Past Presidents
November 3, 1938

Licesinng and Registration of Engineers

(Continued from page 5)

may suddenly change its form or even disappear, replaced by something better. Some carriage builders became great automobile manufacturers. Others lacking versatility, sank into oblivion. Over-specialization is dangerous. The wise engineer stands ready at all times to shift his skill to the design or operation of entirely new types of machines.

You've probably read inspiring stories about men who start young preparing for one specific job. In general, I don't think it's a good plan, although there have been spectacular exceptions. I'm not underestimating the importance of having a definite purpose in life, but feel that too early specialization is extremely dangerous. Observe the ways of the cat. She knows more than one way to jump. Her outstanding talent is the ability to land on four feet under any and all circumstances.

To be safe you've got to be versatile. How many men today are actually in the jobs they picked for themselves 20 or 30 years ago? How can you be sure about what you will be doing in 1958? When that day arrives, the job you planned may not even exist, or the rapidly changing world may have created a new, and much better opportunity for you somewhere else. There is always a lot of chance and uncertainty in human affairs. Above all things prepare yourself to land on four feet no matter where you are tossed. That means being able to do those simple every day things that enter into all jobs everywhere. I hope you get this point, because it is important. Don't decide right now that you are going to be an air conditioning engineer or an aviation engineer. Train yourself in the general fundamentals of the various branches of engineering.

For the greatest personal security, the versatility of the individual engineer should extend beyond his machines to embrace skill in human relations and the every day operation of business. He must learn to live in a world of non-engineers. Products must be bought and sold. Money-bags must be loosened for projects still in the dream stage. Workers must be led, managers adroitly "managed," otherwise human failings will stop the procedure of the most perfect scientific plan.

All successful business men and engineers agree about the importance of getting along with people and of being able to express yourself successfully in writing and in speech. A few engineers, and many of the professors, might claim that there is too much stress laid upon the importance of picking up a lot of practical skills before graduating from engineering schools. Yet as I go on, the more certain I become that certain elementary skills are as fundamentally useful as Ohm's law and the multiplication table, because they enter into every move the engineer makes in actual life.

Don't get the idea that you can safely postpone some of these things until after you get your diploma. Did you ever hear of a great musician who confined himself to the theory of music in his early years and didn't start thumping the piano until he was 25? No, youth is the time to learn to play an instrument, to skate, swim, ride a horse, sail a boat, dance, get along with people, run a typewriter. I can't see any good reason why you should wait until after graduation before learning how to write a business letter, swing a hammer, push a file, sell a bill of goods, or get along with a bunch of workmen.

I, therefore, believe there are three main essentials to success in any job you might get. These are general skills, such as ability with people, writing ability and talking ability. Wouldn't it be just common sense to equip yourself as soon as possible with these skills that will help you to earn a living and move ahead no matter where you may land.

You may not particularly admire the man who goes through life smoothly by shaking hands, writing smart letters and talking glibly, but the fact that it is done so often proves that these abilities have tremendous commercial value. Now your mind is constructive; a comfortable existence as a hot-air artist wouldn't satisfy you. You propose to do useful things and know what you are talking about. Fine; you are in line to become a useful citizen! Nevertheless you must add the qualifications of a salesman to fundamental worthiness, if you expect to accomplish much, certainly so if you seek the maximum personal return in salary and recognition.

What every salesman has is ability with people. By this I mean the ability to win friendly cooperation of all kinds of people, to get along with your boss, your equals and men under you, to get along with those to whom you sell and from whom you buy. No matter what title may be engraved on your business card, you will find that life is largely selling. If the engineer cannot get other people to help him put his sound ideas into action, his technical knowledge has no commercial value and he himself will never be able to hold a good job, regardless of his engineering ability.

When it comes to writing ability, I haven't in mind so much the writing of articles as the ability to write business letters, reports and notes that will put the recipient in the right frame of mind and get things done in the way you want them done. Bad letters and clumsy reports will get you nowhere fast. Talking ability, of course, includes the ability to keep your mouth shut at the right time. It might be defined as the ability to use spoken words (plus discreet silence) to make people think well of you and cooperate with you.

If you can, may I suggest that you spend some time in a shop. Be sure to get some greasy job in overalls, running a machine, surveying, splicing wires, making chemical tests or something like that close to nature. Learn how men feel toward a boss, which qualities thev like in him and which they don't. Learn how it would be wise for you to behave when you get to be boss. Begin to get that "shop sense," for the lack of which some smart theoretical engineers suffer.

It would also be a good idea to spend some time in a store, or you might deliver groceries. This will teach you the simple little things about every-day business, about keeping a lot of details straight and keeping customers satisfied. Most important of all, it will initiate you into the mysteries of salesmanship. These jobs might be taken during summer vacations. I could keep talking on this subject of job preparation, but I guess you get the idea from what I have said. And though you've got some tough years ahead, there will be lots of fun, too, if you go at it right.

As has been pointed out, engineering is a worth-while career because its creative and logical work brings deep personal satisfaction to any man who likes to deal practically with the sciences, men and money. To one who is cut out for the job, being an engineer means living 24 hours a day. Try to acquire some skill in the simple everyday operations of all engineering and business occupations. I repeat, start right now learning how to talk and write English, work with people, sell, handle tools and machines, write business letters, keep simple accounts. Then you will be equipped to make a living with your hands and end as far up the line as your head, your adaptability, your energy and good luck can carry you.

(Continued on page 24)

Address of Alfred E. Roche

(Continued from page 6)

liability for any unfortunate results that may ensue, and the public will look to the engineer to provide the means to avoid them. This is a task which the profession accepts.

It must be remembered that the work of the engineer is more closely identified with labor than the work of any other profession. The doctor deals with medicine and drugs; the lawyer deals with statute and court decisions; the implements of the engineer are labor. We can plan, design, calculate, and determine, how and when and where the work of an engineering character shall be executed, but the artisan will erect and carry out the engineers plan.

John Donlin, former President of the Building Trades Department of the American Federation of Labor, stated last August, after his Union had cut the work week to 30 hours and raised the wage from 1.50 to $2.00 hourly:

"It won't do a craftsman any good to get two dollars an hour, and a thirty-hour week if that makes his product too expensive for other people to buy—those who average thirty or forty cents an hour cannot buy much construction labor."

Mr. Donlin then continued:

"There is a dangerous economic fallacy that high hourly wages and shorter working days are advantageous to labor—there must be a balance between consumer purchasing power and the cost of production of the things the consumer buys."

Engineering as a profession has been practiced for many years. It did not, however, assume the legal aspect that it now enjoys until 1920. Since that year, many of the states adopted laws to protect the public interest by requiring engineers, irrespective of the branch of the profession they practice, to submit tangible evidence of their ability to serve the public. Thirty-eight states now require men, who practice the Profession of Engineering or who use the title Engineer, to demonstrate their fitness, ability and qualifications. In this, engineering is following the precedent of law and medicine. These three learned professions are primarily entrusted with responsibilities affecting human life, human wealth, human rights and human property.

Engineers' registration is required for the protection of the public. The work of no other profession more truly concerns the safety of life, health, and property. Bridges, buildings, dams, mines, and other engineering works must be competently designed to assure both safety and efficiency. The public needs to be protected against the quack, the incompetent, the unscrupulous and the impostor, who do not belong in our profession but who nevertheless attempt to practice in its name. The investor needs to be protected against "engineering" reports by the unqualified and the unscrupulous. The client needs to be protected against paying fees to quacks and incompetents who hold themselves out as "engineers." The courts need to be protected against the testimony of "experts" who pose as members of our profession. The general public needs to be protected against improper planning, inefficient design, wasteful execution, and excessive cost; also against dishonorable dealings.

There seems to be a consciousness on the part of the public and leaders of public affairs that engineering is playing and will continue to play an increasingly important part in the activities of the modern world. There are a few who have condemned the engineer, charging that he has created this machine age, that he has supplanted the labor of men with the product of a machine, disadvantageous to our prosperity. Those who have condemned him have never stated that they would revert to the days of ten, twelve and fourteen hour labor, nor that they would not utilize advantageously every new advance in science, produced by the engineer.

The critics of the engineer state, in general, that our advancement is too rapid, that we are unable to adjust ourselves to the rapidity of new scientific processes. No critic, nor force, can curtail advancement which carries with it beneficial enjoyment, and the release of work hours from labor.

Just as the internal combustion engine displaced the trolley car, and steel displaced iron, and concrete displaced brick, and rayon displaced silk and cotton, and electric energy displaced gas, so will many so-called staple work and processes meet their doom in scientific advancement. Let us be prepared to equitably refinance them, the works in this transition.

One of the tragedies of our times is to read of the funded debt of rails—bond issues which will not mature for 80 to 100 years. That type of burden would never exist if the finance executives heeded the engineers' appraisal.

From a booklet entitled "Social Trends," I find this paragraph:

"The machine has given the laboring man more comforts than Queen Marie had at Versailles. Many workmen today live in steam-heated houses with bathtubs, and hot and cold running water, and indoor toilets. More than a few of them have automobiles. In Queen Marie Antoinette's apartment in the Palace in France, there was no stove nor bathtub. Her bowl and pitcher were not as convenient as the modern wash basin with its running water and drainpipe. Very probably the girl behind the counter at Woolworth's has more silk stockings than had this queen, 150 years ago. She never saw a train, nor heard of coal, nor knew a steamboat. She never had a radio, nor a telephone. She never went to a moving-picture show. Her food was cooked over an open hearth in the cellar of the palace, not on a coal or a gas range. In her day, washerwomen went down to the river, where they washed garments in the running water, beating them out on the rocks. Electric washing machines and wringers, electric irons and mangles have made women's work easier. The girl of today enjoys luxuries the Queen of France never heard of. The machine has given us many comforts and conveniences."

All this is another way of saying that our standard of living has been greatly raised by the machine.

Until quite recently, the engineering profession completely neglected the protection of its professional designation against misuse and misappropriation.

The other legally established professions have long ago come to realize that it is even more important to protect their designations than their professional practice. Any unqualified man advertising himself as a "Lawyer," a "Physician," a "Dentist," or an "Architect," will promptly be arrested and subjected to the penalties of the law.

Some years ago, a leading engineering periodical collected and published serially examples of misappropriations of the term "Engineer." There were domestic and insurance engineers, furniture and amusement engineers, fence and social engineers, plumbing and exterminating engineers. Some 272 such appellations were held up to our professional amusement or indignation. This condition has been altered. The profession has won the support of the locomotive drivers for his use of the term "engineman."

As long as any non-engineer can with impunity call himself an "Engineer," prefixing any random adjective (such as sales, radio, trucking, real estate, contracting,

decorating, etc.), the uninformed and the antagonistic will retain an excuse to charge that engineering is not a learned profession.

The public judges a profession by the example it sees. When the public sees the word "Engineer" on the shop window of a plumber, an electrician, a radio dealer, or a garage mechanic, a wrong picture of the engineering profession is implanted. The public likewise deplores this condition.

It is a simple operation in our daily lives to turn on the water faucet; to stoke the coal; to hop in our machine, bus, or train to work; to cross the bridges; to ride the pavements and elevator; to process our foods; to photograph our insides; to mine our elements; to generate energy; to synchronize our machines; to purify the air, the body, the food and the water, and yet there is back of those simple operations the years of study, training and experience of the men who practice mining, chemical, electrical, mechanical and civil branches of the profession. There is also in back of it your savings, your capital, your chattels to be protected by the engineers skilled in its utilization.

Doctor Steinman, one of the eminent engineers of the country, wrote in the last issue of the publication THE AMERICAN ENGINEER:

"Popular fiction and movies have created a misleading picture of glamour and drama in the work of the engineer. Reduced to cold facts, it is found that the work of the engineer is quite prosaic and frequently of repetitive routine. Engagements and compensation are limited by the cutting competition of the unscrupulous and the less competent. Credit and honor are scant; responsibility is heavy. A single serious mistake in judgment will wreck an engineer's career. Industrial corporations on the outlook for low cost engineering services are in a measure to blame for the low compensation received by the engineer. There are many competent engineers who wish they could earn as much as bricklayers, plumbers, painters, ironworkers and mechanics. It is said the field of professional engineering is overcrowded and many engineers of the profession have come to the conclusion that there are too many engineering schools competing for enrollment and too many engineering graduates are being turned out annually with sufficient cultural background to assume their rightful place in the competitive engineering field."

From this, it is to be observed that the laborious work of the engineer will not bring the financial reward his expense, his training, his investment in himself warrants. In this respect, engineering is like many more of the professions—overcrowded, and without just reward.

If I were asked what omissions of the past can reestablish confidence and restore good will advantageously to business, I would say:

To the Investment Banker: Always secure an independent physical appraisal by a licensed professional engineer of the property, unit by unit, of the borrowing company. You will receive, devoid of prejudices, a statement of basic values which are in accord with the true worth of the property. Only security issues of questionable value evade the opinion of the independent engineer's appraisal.

The engineer will not risk the loss of his right to practice his profession by submerging his integrity. The public have learned to demand the appraisal of an independent professional engineer.

To the Industrialist and to Organized Labor: The licensed professional engineer, independent in thought, motivated solely by his implied oath to government to safeguard the life, health, and property of the citizens, can be of inestimable value in mediating divergent viewpoints between employer and employee. The licensed engineer is an agency which seeks the facts free from prejudice. His intimate knowledge of the cost of production, distribution, life of the property, and requirements for maintenance of the high standards of American livelihood, permit him to act impartially in the matters of public relations at times of strife.

The licensed professional engineer has spent his livelihood in dealing with the true worth and value of machines and works and processes so that his knowledge of the commercial worth of structures and plant and work performed is accepted in public circles. He typifies that group of professional men, who represent the forces, seeking the elimination of chicanery in public and private undertakings. A forward-looking step in our restoration of prosperity will be attained when commerce, industry, public work and manufacturing interests utilize to a greater extent the services of the professional engineer and the known high degree of integrity which that profession enjoys.

In these industrial North Atlantic States, if there is developed that mind and spirit of courageous fortitude, simple integrity, and agreements without mental reservations, there will also be restored that profitable exchange of goods and services, each honestly rendered in return for money and fair wages paid. This is the struggle which the professional engineer can lend himself to, and solve with the aid of the industrialist, the banker, the editor, and organized labor, to the enjoyment of a return to prosperous days.

Licensing and Registration of Engineers

(Continued from page 22)

In conclusion, may I urge you to be active in your professional work, so that your individual career and your profession may be benefited. Be active in your local community. Communities, which are influenced by engineers, are always better places to live in. City managers are nearly all engineers. Be active in your church because it makes you a better citizen and strengthens our homes and country. And now, on behalf of the New York State Society of Professional Engineers, I wish you will have happy and successful careers as Professional Engineers.

A SYMPOSIUM ON REGISTRATION WAS HELD MONDAY, JANUARY 23D. AT THE ENGINEERS' CLUB IN PHILADELPHIA

Joint Meeting—Pennsylvania Society of Professional Engineers, Philadelphia Chapter, and Philadelphia Section, American Society of Civil Engineers.

Chairman of the Meeting—

SAMUEL I. SACKS, ESQ., Civil Engineer, and Attorney-at-Law, Philadelphia, Pa.

Registration of Engineers in the United States—

PERRY T. FORD, President, National Society of Professional Engineers; Secretary, State Registration Board of Professional Engineers of the State of Ohio.

Registration of Engineers in Pennsylvania—

ROBERT HALL CRAIG, Editor-in-Chief, THE AMERICAN ENGINEER; *Member*, National Society of Professional Engineers, American Society of Civil Engineers and the Philadelphia Section; President, Pennsylvania Society of Professional Engineers.

The Legal Aspect of Registration—

SAMUEL I. SACKS, ESQ., Chairman, Legislative Committee, National Society of Professional Engineers; Member, American Society of Civil Engineers, and a Director of the Philadelphia Section.

Report of Registration in Delaware—

HARRY S. STANTON, Member, American Society of Civil Engineers; Chairman of the Delaware Registration committee of the Philadelphia Section.

Discussion to be led by

FREDERICK H. DECHANT, Member, National Society of Professional Engineers, American Society of Civil Engineers and Philadelphia Section and

COL. C. E. MYERS, Member, National Society of Professional Engineers; American Society of Civil Engineers; Member, Engineers Society of Pennsylvania; President, State Registration Board for Professional Engineers of Pennsylvania.

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Anyone knowing the address of Laurence C. Fisher, please notify C. J. Berner, Secretary, Bridgeport Chapter, Connecticut Society of Professional Engineers, 40 Summerfield Avenue, Bridgeport, Connecticut.

PROFESSIONAL INSURANCE—EVERY ENGINEER A MEMBER

A well-known news commentator recently remarked that the public is buying fewer stocks and bonds, but is investing more of its savings in life insurance.

Insurance to protect a man or his family after his death or when his earning capacity is decreased is worthwhile and to be encouraged.

But . . . How about those who have not taken out insurance to increase and stabilize their *present* earning capacity? To give themselves and family additional comforts and conveniences while they can enjoy them. To secure additional revenue to protect themselves when their earning power is gone or protect their families after their death. To provide security in their present or a more responsible position. To guard themselves or their business against those not qualified to practice Engineering?

To those Engineers who have not joined with us in our campaign to gain well-deserved recognition an commensurate remuneration, I say they are cheating themselves as well as delaying us in accomplishing our objective, which should be their objective as well.

The work we are doing cannot be confined to members of this Society, or to Professional Engineers, but will of necessity be of benefit to all those engaged in Engineering. (Of the many whom this Chapter has aided in securing positions, about 95% were men who could not qualify as Professional Engineers).

Any Engineer who has not joined us because of financial reasons, has not thought out the problem clearly. He saved the amount of the yearly dues, but he is prolonging the time when he can expect to receive adequate reward and recognition for his services. He has alreadv lost more than the value of the dues he would have paid.

If the Society had received the dues and obtained the active interest of the more than 4,000 Professional Engineers in this Commonwealth, consider what tremendous advancements could have been accomplished.

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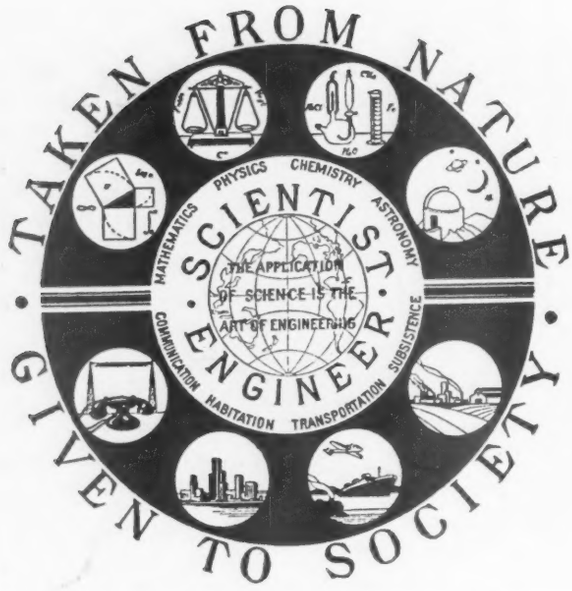

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